Other Area 3 Former UST PL-23 Interim Measures Completion Report

Boeing—Plant 2
Seattle, Washington

Submitted To:
The Boeing Company

February 1999

WESTON MANAGERS DESIGNERS/CONSULTANTS

Other Area 3
Former Underground Storage Tank PL-23
Interim Measures Completion Report

Boeing—Plant 2

Submitted to

The Boeing Company
Seattle, Washington

February 1999

Prepared by

Roy F. Weston, Inc.
700 Fifth Avenue
Suite 5700
Seattle, WA 98104-5057

WO: 3709-034-410-0004

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OTHER AREA 3
FORMER UNDERGROUND STORAGE TANK PL-23
INTERIM MEASURES COMPLETION REPORT

1. INTRODUCTION

This Interim Measures Completion Report (IMCR) describes the results of work performed during removal of soil associated with former underground storage tank PL-23 (UST PL-23). This area is also known as Other Area 3 (OA3).

1.1 Background

Located south of Building 2-80 was a former UST identified as PL-23. Figure 1 shows the approximate location of the tank. PL-23 had a capacity of 1,000 gallons and was initially installed in 1951. This tank was used to store gasoline. PL-23 was removed in 1992. A visual inspection performed at the time of removal found exterior surface corrosion over the tank's surface. The most severe corrosion was found at the discharge piping. No holes were evident in the tank (Groundwater Technology 1992). Soil immediately underneath the tank appeared to be stained and had a moderate odor. During tank removal, 5 cubic yards of impacted soil was removed. Additional soil near the tank could not be removed due to its location adjacent and under the foundation of Building 2-80. A tank removal report was prepared and submitted to the State of Washington in 1992 (Groundwater Technology 1992).

Gasoline-range hydrocarbons were detected in soil samples taken from the north and south wall of the excavation as well as from a soil boring sample collected north of the former tank. The gasoline and benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations were highest in the uppermost 8 feet of the soil column. Below 8 feet, gasoline/BTEX was detected but was lower in concentration. Figure 2 shows the location of the former tank, the approximate size of the original excavation, and soil and groundwater sample locations. Tables 1 and 2 provide the concentrations of gasoline and BTEX constituents in soil and groundwater associated with each of these locations.

Based on the use of this tank, gasoline ranged hydrocarbons were determined to be the contaminants of concern (COCs). Lead, a potential constituent of gasoline, was not found in dissolved groundwater concentrations exceeding ambient water quality criteria (WESTON 1997a). Therefore, lead was not included as a COC.

To define the southern boundary of the impacted soil, three additional soil borings were completed at distances of 15, 40, and 60 feet south of the tank location. Samples were collected at depths of 3, 6, and 9 feet in each boring and analyzed for total petroleum hydrocarbons-gasoline (TPH-G) and BTEX. No detectable concentrations of BTEX or TPH-G were found in any of the samples. The two groundwater monitoring wells on each side of the former tank (MW304A and 305A) were tested for floating product. No floating product was found in the wells. A report describing the results of this delineation effort is provided in Appendix A.

The above information, along with RCRA Facility Investigation (RFI; WESTON 1997b) data, indicated the impacted soil did not extend more than a few feet from the tank excavation sidewalls. Groundwater was not appreciably impacted.

Table 1—OA3 Soil COC Concentrations

Sample No.	Depth (ft)	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)
SB-08603	7.5	ND	NA	NA	NA	NA
	10	ND	NA	NA	NA	NA
	12.5	NA	NA	NA	NA	NA
SB-08005	2	2,100	ND	ND	ND	2
	7	ND	ND	ND	ND	ND
	11	ND	0.009	ND	0.001	0.005
SB-08006	5	ND	NA	NA	NA	NA
	7.5	ND	NA	NA	NA	NA
	10	ND	NA	NA	NA	NA
SB-08007	5	ND	NA	NA	NA	NA
	7.5	ND	NA	NA	NA	NA
	10	ND	NA	NA	NA	NA
SB-08009	0.6	ND	ND	ND	ND	NA
	6	ND	ND	ND	ND	NA
SB-08013	5	ND	NA	NA	NA	NA
	9	ND	NA	NA	NA	NA
	12	ND	NA	NA	NA	NA
SB-08015	4	ND	ND	ND	ND	ND
	7	ND	ND	ND	ND	ND
	9	ND	ND	ND	ND	ND
EX-1	8	1,200	49	650	260	1,400
EX-3	8	14,000	1.9	9.9	11	76
EX-5	10.5	19	0.28	ND	0.28	0.86

NA: Not Analyzed
ND: Not Detected

Table 2—OA3 Groundwater COC Concentrations

Sample No.	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	TPH-gasoline (mg/L)
GP-08001	ND	1.6	ND	ND	ND
GP-08002	ND	ND	ND	ND	ND
GP-08003	ND	ND	ND	ND	ND
GP-08007	ND	ND	ND	ND	ND
PL2-304A	48	ND	45	ND	NA
PL2-305A	ND	ND	ND	ND	NA

NA: Not Analyzed
ND: Not Detected

The portion of Building 2-80 near OA3 was demolished and a new building is being constructed over this site. As a result, access to the impacted soil was now possible. It was decided to remediate OA3 by removing soil containing TPH-G and BTEX to allow unimpeded construction of the new facility.

1.2 Interim Measures Objectives

The Interim Measures Objectives for this project were:

- Remove impacted soil to allow renovation of Building 2-80. Remove soil to the extent that no potential future risks to human health or the environment above accepted guidelines are likely given the proposed use of the facility.
- Remove soil to the extent that it will be at least as protective as final remedies selected for similar sites in the corrective measures study (CMS).
- Provide a timely response to mitigate "short-term" construction risks associated with exposure of contaminants.

The soil cleanup levels for Plant 2 have not yet been established by the U.S. Environmental Protection Agency (EPA). Washington State Department of Ecology Model Toxics Control Act (MTCA) Method A as specified in WAC 173-340-745 was used as numerical targets in lieu of EPA-approved cleanup levels. The criteria specified therein for BTEX are 0.5, 40.0, 20.0, and 20.0 mg/kg, respectively. The cleanup level for gasoline is specified as 100 mg/kg.

The excavation goal in the work plan (WESTON 1997c) was to remove soil to a depth of 10 feet (anticipated groundwater depth) or until groundwater was encountered. Any contaminated soil remaining below the groundwater table would be addressed as a groundwater issue if necessary. Because of the small size of the impacted soil area, the sandy nature of the soil and the presence of a storm drain running through the site, removal below the groundwater table was not practical.

2. DESCRIPTION OF WORK COMPLETED

Foss Environmental was contracted by WESTON to perform the construction work. Foss Environmental reported to WESTON. WESTON, in turn, reported to Boeing's onsite engineer. The IM scope of work was prepared by WESTON.

A utility survey of the site was completed. A storm drain, electrical duct bank, and fire main ran through the site. A roof drain was also present. The electrical duct bank was confirmed to be de-energized and the fire main had been shut off prior to building demolition.

The area to be excavated was measured and marked with yellow spray paint. The asphalt was peeled back on Wednesday, 25 March 1998. A stockpile area was set up using jersey barriers and plastic.

Excavation of the soil began on Thursday, 26 March 1998. Prior to excavation, straw bales were placed around a catch basin located southeast of the area to be excavated. Foss Environmental was the contractor responsible for soil removal. WESTON personnel on-site included a field sampler and a construction manager. The field sampler was equipped with an organic vapor monitor (OVM). The OVM was used to sniff the soil to determine which soil was contaminated and needed to be stockpiled separately from clean soil (i.e., no vapors detectable). The intent was to keep the contaminated soil separate from the clean soil. Upon stockpile confirmatory sampling, the clean stockpiled soil would be reused and the contaminated soil would be sent to an off-site disposal facility.

Soil excavation began on the north side of the area marked for removal. The first few backhoe buckets of soil had very low OVM vapor readings (1 to 2 units). These readings were similar to background readings indicating the soil was potentially noncontaminated. After 1 cubic yard of soil had been excavated, the OVM readings started to increase. Upon reaching the elevated OVM readings so quickly, it was decided to place the impacted soil in the same location as the initially excavated clean soil since the quantity of clean soil was small.

The OVM readings from the stockpiled soil kept increasing. When the excavation reached a depth of approximately 4 feet on the north side, a light-gray fine soil lens was encountered that had a strong odor of weathered gasoline. The lense was approximately 1 to 2 feet thick. OVM reading of this soil hit a maximum of 75 units. The stained soil lense was excavated northward until visibly removed. Sidewall soil was sniffed and found to have background OVM readings.

Excavation continued downward to a depth of 8 feet where pooling water began to occur. Soil collected from beneath the impacted lense was sniffed and found to have low to no OVM readings. Soil collected from the bottom of the excavation also had low background OVM readings. Soil excavation then began in a southward direction after attaining a depth of 8 feet. The impacted soil lense did not extend far to the south. Overall, the lense was approximately 15 feet (east-west direction) by 5 feet (north-south) by 1 to 2 feet thick.

Low OVM readings (5 units) were observed in soil excavated to the south of the lense. This soil was placed on the impacted stockpile. Excavation continued southward at a depth of 8 feet until

it reached 4 feet from the location of the storm drain. Inspection of the storm drain manhole indicated the top of the drain was located approximately 7 feet below ground surface.

The depth of the excavation was decreased to approximately 5 feet to allow 2 feet of clearance over the drain. Excavation continued south at a depth of 5 feet until it was 4 feet past the southern edge of the drain. The depth of excavation at that point was increased to 7 feet to allow support for the drain. Soil over the drain continued to have low to no OVM readings. This soil was placed in the non-contaminated soil stockpile.

The excavation continued southward. Soil from the bottom and sidewall area south of the storm drain had no OVM readings and was also segregated from the impacted soil. Soil was excavated until it was approximately 3 feet north of soil boring SB-08015, which had been used to define the southern extent of the impacted area as discussed previously.

At key points during excavation, discrete soil samples were taken from within the excavation for laboratory analysis. One sample was collected from the north sidewall at an elevation of 6 feet from the top. Another sample from the excavation bottom was collected. A third sample was collected from the south sidewall at an elevation of 5.5 feet below the top. All samples were taken by removing outer material and exposing inner soil for sampling. Because of the excavation depth, soil samples were collected with the backhoe bucket.

Figure 3 shows the final excavation configuration and confirmatory soil sample locations.

When the former tank excavation was completed, soil stockpiles were covered with plastic and weighted down.

On Tuesday, 31 March 1998, the two soil stockpiles were sampled for disposition. Three grab samples were collected from each stockpile where the field OVM indicated the highest readings. The samples were placed directly into sample jars. Soil samples were collected by removing the outer 1 foot of material and collecting a soil sample from the interior of the stockpile. The impacted soil stockpile was estimated to contain 40 cubic yards and the potentially nonimpacted stockpile was estimated to contain 40 cubic yards.

Confirmatory and stockpile soil sampling was performed in accordance with Washington State Department of Ecology guidance (Ecology 1992).

The final soil conditions at OA 3 have no potential to further impact groundwater. The wells were removed, the soil where the monitoring wells were located was removed and the soil with elevated concentrations of gasoline/BTEX was removed.

3. ANALYTICAL RESULTS

The results of confirmatory excavation sampling is shown in Table 3 below. Sample data are provided in Appendix B.

Table 3—Excavated Area Confirmatory Soil Sample Data

Sample No.	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Xylene (µg/kg)	TPH-gasoline (mg/kg)
SB08032-0060	62U	62U	62U	100	6.2U
SB08033-0055	56U	56U	56U	56U	5.6U
SB08034-0080	58U	58U	58U	58U	5.8U

Note: U indicates the constituent was not detected at the listed detection limit.

The analytical data reflects mostly nondetectable concentrations of confirmatory constituents. Detected constituents are below their respective MTCA cleanup concentrations.

4. DISPOSAL

Three discrete soil samples were taken from each stockpile. The stockpile sample locations are shown in Figure 4. Complete soil stockpile data used for disposal characterization are provided in Appendix C.

Decontamination of personnel, sampling equipment and excavation machinery generated approximately 3 gallons of decontamination solutions. These decontamination solutions were distributed over the designated "impacted" soil stockpile for disposal.

The impacted soil was taken to Columbia Ridge Landfill, Arlington, Oregon. The nonimpacted soil was reused as fill on-site.

5. QUALITY CONTROL

Sampling procedures followed Washington state guidance for Site Checks and Site Assessments for Underground Storage Tanks. Sampling equipment was decontaminated after each sampling episode using alconox and a deionized water rinse. Samples were placed into clean jars and chain-of-custody forms completed.

Upon completion of sampling, the confirmatory samples were taken directly to Analytical Resources, Inc., for analysis.

BTEX was measured using EPA Method 8020. Laboratory spikes and blanks were run to confirm the validity of the analytical results. Gasoline was determined using gas chromatography/flame ionization detection (GC/FID) methods.

A Quality Control checklist was used to ensure quality of the work and that the removal requirements were met. This checklist provided inspection points within the work. The completed checklist is provided in Appendix D.

6. SUMMARY

The objectives of the interim measure were achieved. Soil remaining at OA3 has essentially nondetectable concentrations and is well below the MTCA Method A cleanup goals for BTEX and gasoline. Stockpiled soil was characterized and properly disposed.

7. REFERENCES

Groundwater Technology. 1992. Tank Removal Report- UST PL-23, Prepared by Groundwater Technology, Inc., December 1992.

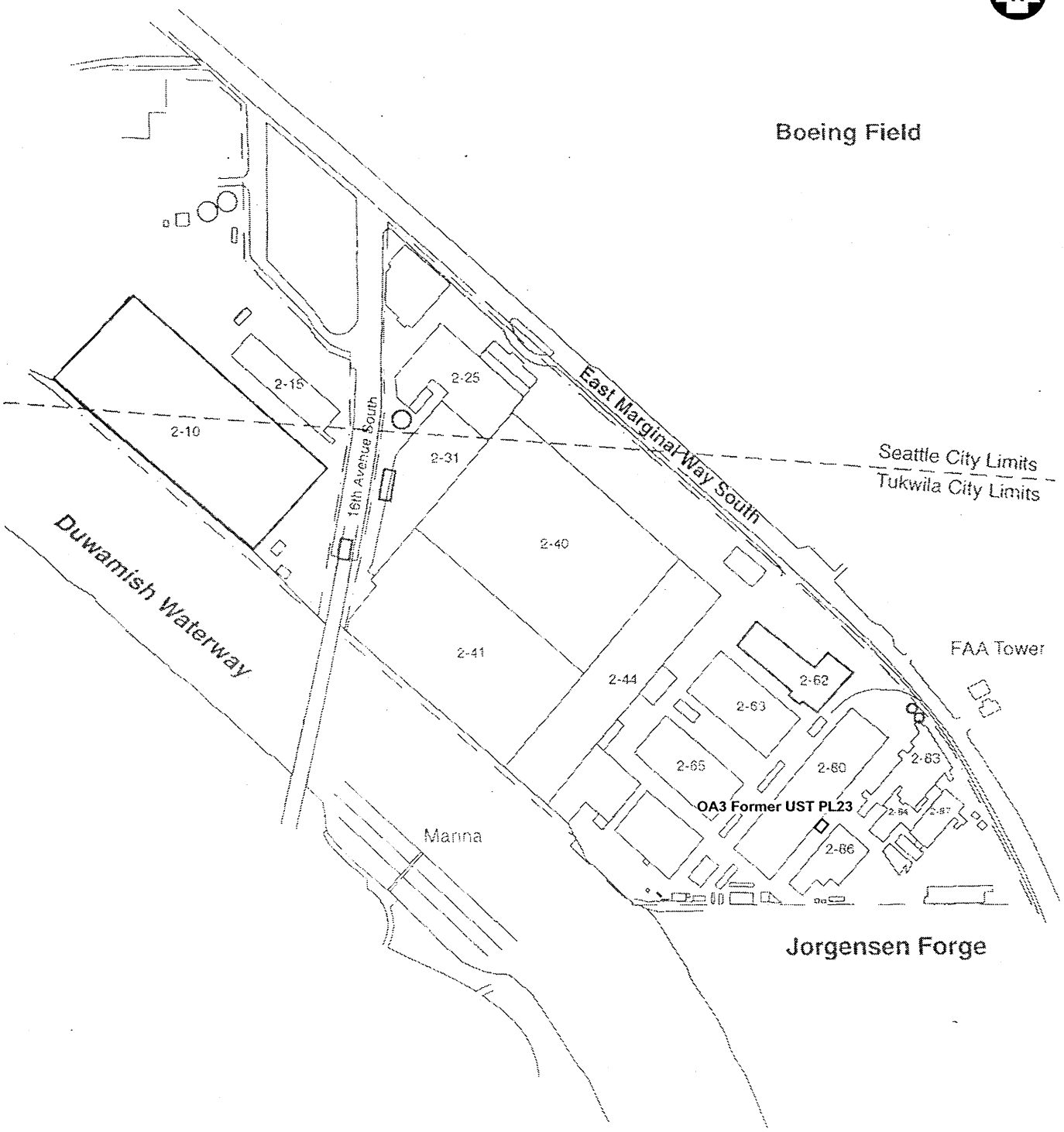
Ecology (Washington State Department of Ecology). 1992. Guidance for Site Checks and Site Assessments for Underground Storage Tanks. Publication No. 90-52.

WESTON (Roy F. Weston, Inc.). 1997a. RCRA Facility Investigation, Groundwater Investigation Interim Report. Prepared for The Boeing Company. Roy F. Weston, Inc. August.

WESTON. 1997b. RCRA Facility Investigation, Soil Investigation Interim Report. Prepared for The Boeing Company. Roy F. Weston, Inc. August.

WESTON. 1997c. OA3 Former UST PL-23 Interim Measures Work Plan. Prepared for The Boeing Company. Roy F. Weston, Inc. March.

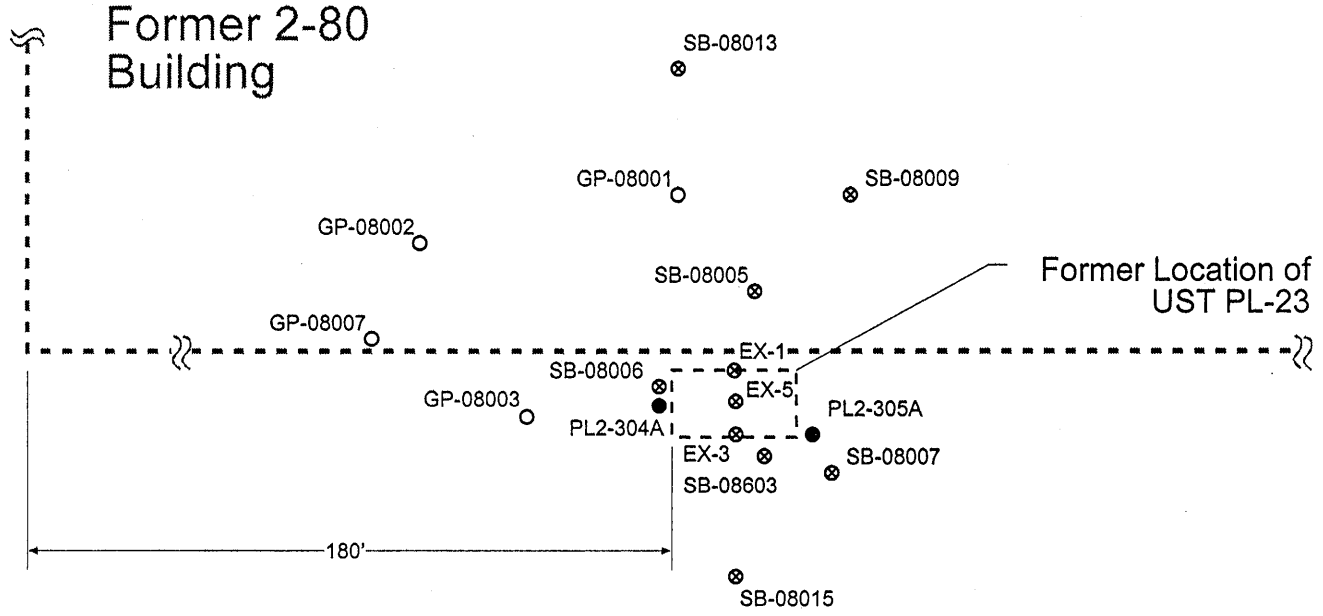
FIGURES



Site Map

FIGURE
1

98-0389 Fig1.fh8



EXPLANATION

- ⊗ Soil Boring
- ● Monitoring Well
- ○ Geo-Probe

N

0 10 20

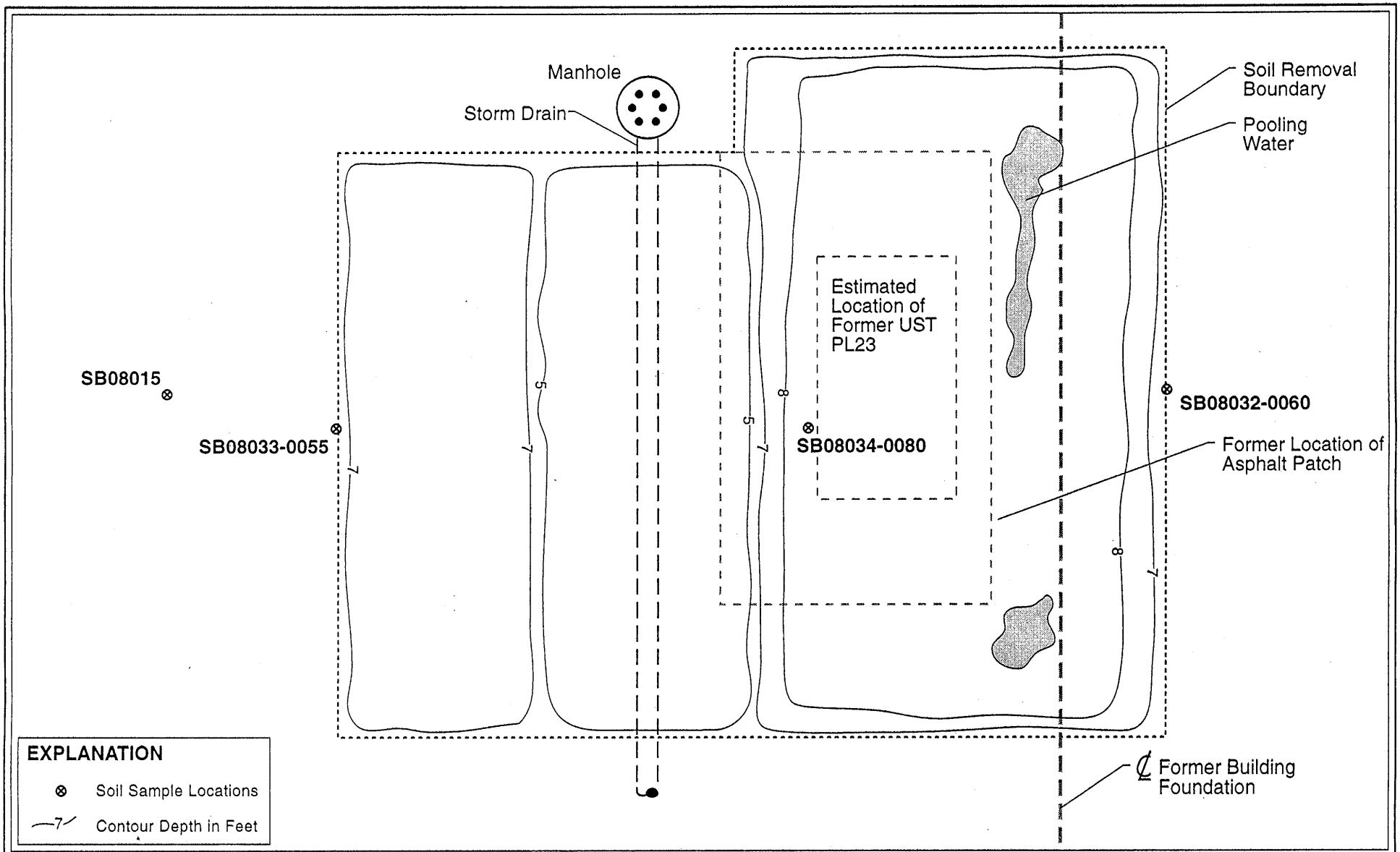
Scale In Feet

Boeing – Plant 2
OA 3 Soil and Groundwater Sampling Locations

WESTON® MANAGER DESIGNERS/CONSULTANTS

Figure
2

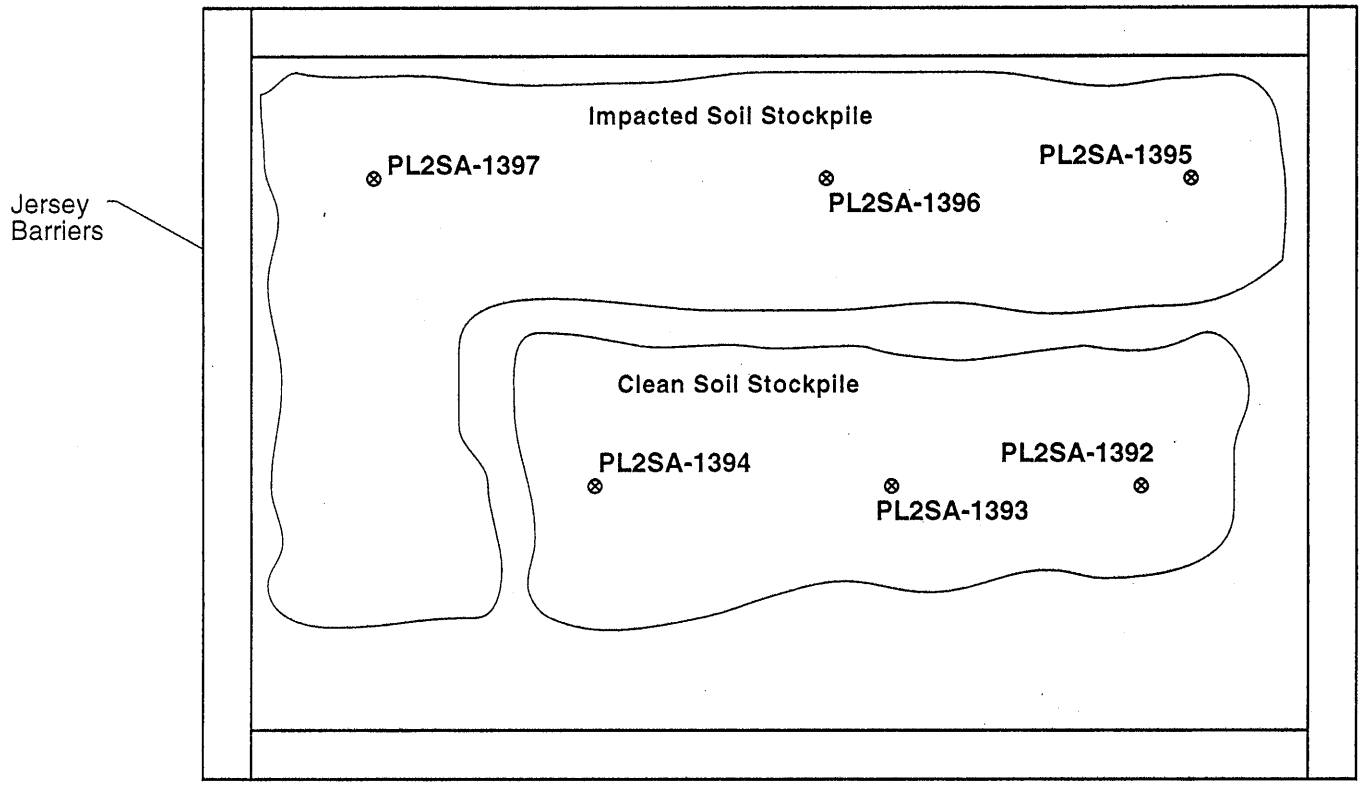
98-0389 Fig2.FH8



Boeing – Plant 2
OA 3 Excavation Plan

Figure
3

98-0389 Fig3x.FH8



EXPLANATION

⊗ Soil Sample Locations

DRAWING NOT TO SCALE

WESTON® MANAGER DESIGNERS/CONSULTANTS

Boeing – Plant 2
Soil Stockpile Sample Locations

Figure
4

98-0389 Fig4.FH8

APPENDIX A

OA3
IMPACTED SOIL
DELINEATION REPORT

WESTON®
MANAGERS DESIGNERS/CONSULTANTS
Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

31 October 1997

Mr. Skip Fox
Project Geologist
Information Support Services
Energy and Environmental Affairs
PO Box 3707, MS 7A-XA
Seattle, WA 98124-2207

WO 3709-34-403-0001

Subject: OA3 Former Underground Storage Tank

Dear Skip:

Attached is a brief report documenting the results of the investigation to define the extent of gasoline impacted soil at Other Area 3 "Former UST PL-23." The most recent data (in addition to the RFI data) indicate that the gasoline in soil is confined to a relatively small localized area around the former tank.

Because the estimated quantity of soil is small, it may be most efficient to address this soil during Building 2-81 construction rather than remove it under its own Interim Measure.

If you have questions, please call me at 521-7692

Sincerely,

ROY F. WESTON, INC.

Larry Vanselow
Project Manager

Attachment
cc: R. Rogers
Project file

OA3 SOIL

INVESTIGATION RESULTS

INTRODUCTION

Other Area (OA) 3 was the site of former underground storage tanks. Based on data collected during tank removal and from the RCRA Facilities Investigation (RFI), soil in OA 3 was found to contain gasoline and components of gasoline. Gasoline concentrations as high as 14,000 mg/kg have been noted.

During the RFI, the extent of gasoline-impacted soil was relatively well bounded on the north, west, and east sides. However, to support renovation of Building 2-80, the extent of gasoline-impacted soil on the south side of OA3 was required.

This document provides a summary of work performed and the results of soil sampling to define the southern extent of the OA 3 gasoline-impacted soil.

WORK PERFORMED

Three borings (SB-08015, SB-08016 and SB-08017) were completed in the southward direction of OA 3. The borings were located at distances of 15, 40, and 60 feet from the former underground storage tank.

Samples were collected at depth of 3 feet, 6 feet and 9 feet in each of the three borings. The samples were sent to ARI for TPH-g and VOC analysis. In addition, during sample collection, an Hnu was used to "sniff" the soil for volatiles.

Upon completion of the borings, the holes were filled with bentonite chips.

Groundwater monitoring wells 304A and 305A were checked for floating product.

RESULTS

The Hnu detected no vapors in any of the soil samples collected. Analytical results were also non-detect, indicating no gasoline is present in the most recent samples outbound of the former tank location. The analytical results are attached.

No floating product was found in monitoring wells 304A and 305A.

Based on new and existing information, the maximum quantity of impacted soil is estimated at 200 cubic yards. It is likely that the actual quantity of impacted soil is much smaller—on the order of 50 cubic yards.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

043

9 September 1997

Skip Fox
The Boeing Company
Information and Support Services
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

RE: Plant 2 Soil Analysis
ARI Job T588

Dear Skip:

Please find enclosed a sample custody record and a final analytical data set for the above referenced project. Nine solid samples were received in good condition from Roy F. Weston, Inc. on August 27, 1997.

As requested, samples were analyzed for gasoline range hydrocarbons referencing WDOE method WTPH-g and for volatile aromatics referencing EPA method 8020. The sample reports show raised detection limits for toluene due to background interference (see "Y" flag).

No other analytical complications were noted for this delivery group. Quality control analysis results are included for your review. Copies of the reports and all associated raw data will be kept on file. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Jeff J. Reitan
Project Management
jeffr@cnw.com

JJR/jr
Enclosure

cc: Rudy Rogers, The Boeing Company (M/S 19-16)
Roger McGinnis, Roy F. Weston, Inc.

Chain of Custody Record & Laboratory Analysis Request

Date: 8/27/97
Page 1 of 2
Number of coolers: 1
Cooler Temp: NA

Analytical Resources, Incorporated
Analytical Chemist and Consultants
400 Ninth Avenue North
Seattle, WA 98109-4708
(206) 621-6490
(206) 621-7523 (Fax)

ARI Client: BOEING Phone#: 521-7668
Client Contact: Roger McGinnis
Client Project ID: 03709-034-403-0001-00
Samplers: STURM/Thrasher

	Sample ID	Date	Time	Matx	No Cont	Lab ID	Analysis Required: TPH-D	Analysis Required: BTEX	Notes/Comments
1	SB-080015-0040	8/27	0955	Soil	1		✓	✓	97-15041 to 97-15049
2	SB-080015-0070		1015		1		✓	✓	
3	SB-080015-0090		1030		1		✓	✓	
4	SB-080016-0030		1105		1		✓	✓	
5	SB-080016-0060		1115		1		✓	✓	
6	SB-080016-0090		1125		1		✓	✓	
7	SB-080017-0030		1210		1		✓	✓	

ARI Project No: 1588
T.A.T. Requested:
Comments/Special Instructions:

	Relinquished by: (Signature)	Printed Name:	Company:	Date:	Time:
	Richard Sturm	RICHARD STURM	WESTON	8/27/97	1555
	Relinquished by: (Signature)	Printed Name:	Company:	Date:	Time:
	Relinquished by: (Signature)	Printed Name:	Company:	Date:	Time:

	Received by: (Signature)	Printed Name:	Company:	Date:	Time:
	Mary Lou Fox	Mary Lou Fox	ARI	8/27/97	1555
	Received by: (Signature)	Printed Name:	Company:	Date:	Time:
	Received by: (Signature)	Printed Name:	Company:	Date:	Time:

Chain of Custody Record & Laboratory Analysis Request

Date: 8/27/97
Page 2 of 2
Number of coolers: 1
Cooler Temp:

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400 Ninth Avenue North
Seattle, WA 98109-4708
(206) 621-6490
(206) 621-7523 (Fax)

ARI Client: BOEING Phone#: 521-7668
Client Contact: Roger McGinnis
Client Project ID: 03709-034-0001-00
Samplers: STURM/Thrasher

	Sample ID	Date	Time	Matx	No Cont	Lab ID	BTEX	TPH-G						Notes/Comments
1	SB-080017-0065	8/27	1215	Soil	1		✓	✓						
2	SB-080017-0090	8/27	1225	Soil	1		✓	✓						
3														
4														
5														
6														
7														

ARI Project No:
T.A.T. Requested:
Comments/Special Instructions:

	Relinquished by: (Signature)	Relinquished by: (Signature)	Relinquished by: (Signature)
	Printed Name: RICHARD STURM	Printed Name:	Printed Name:
	Company: WESTON (NW)	Company:	Company:
	Date: 8/27/97 Time: 1555	Date: Time:	Date: Time:
	Received by: (Signature) Mary Lou Fox	Received by: (Signature)	Received by: (Signature)
	Printed Name: Mary Lou Fox	Printed Name:	Printed Name:
	Company: ARI	Company:	Company:
	Date: 8/27/97 Time: 1555	Date: Time:	Date: Time:

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

QC Report No: T588-Boeing Corporate SHEA
Matrix: Soil Project: 03709-034-403-0001-00

Data Release Authorized: *WB* Date Received: 08/27/97
Reported: 09/09/97

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range Hydrocarbons		Gasoline ID	Surr A Rec	Surr B Rec
T588-0904MB	Method Blank	09/04/97	1:1	5.0	U	NO	91.0%	75.4%
97-15041-T588A	SB-080015-0040	09/04/97	1:1	5.0	U	NO	93.4%	80.3%
97-15042-T588B	SB-080015-0070	09/04/97	1:1	5.0	U	NO	86.4%	70.4%
97-15043-T588C	SB-080015-0090	09/04/97	1:1	6.1	U	NO	80.6%	70.2%
97-15044-T588D	SB-080016-0030	09/04/97	1:1	5.0	U	NO	98.7%	81.8%
97-15045-T588E	SB-080016-0060	09/04/97	1:1	6.3	U	NO	85.1%	72.4%
97-15046-T588F	SB-080016-0090	09/04/97	1:1	7.6	U	NO	83.3%	72.3%
97-15047-T588G	SB-080017-0030	09/04/97	1:1	5.0	U	NO	96.6%	83.9%
97-15048-T588H	SB-080017-0065	09/04/97	1:1	5.3	U	NO	95.6%	85.9%
97-15049-T588I	SB-080017-0090	09/05/97	1:1	5.0	U	NO	86.5%	76.0%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.
Values reported in ppm (mg/kg) on a dry weight basis.
Quantitation on total peaks in the gasoline range from Toluene to C12.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

Lab Sample ID: T588SB
LIMS ID: 97-15041
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Data Release Authorized: AHB
Reported: 09/09/97

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Analyzed 09/04/97

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
LABORATORY CONTROL SAMPLE			
Gasoline Range Hydrocarbons	2.23	2.5	89.2%

TPHg Surrogate Recovery

Trifluorotoluene	98.7%
Bromobenzene	

Values reported in parts per million (mg/kg)

TPHg SPIKE CONTROL LIMITS

Percent Recovery 80.0-120%

Advisory QA Limits

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080015-0040

Lab Sample ID: T588A
LIMS ID: 97-15041
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 8.4%

Sample Amount: 0.053 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	47 U
108-88-3	Toluene	190 Y
100-41-4	Ethylbenzene	47 U
	m,p-Xylene	47 U
95-47-6	o-Xylene	47 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	99.1%
Bromobenzene	84.1%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080015-0070

Lab Sample ID: T588B
LIMS ID: 97-15042
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 20.5%

Sample Amount: 0.052 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	48 U
108-88-3	Toluene	190 Y
100-41-4	Ethylbenzene	48 U
	m,p-Xylene	48 U
95-47-6	o-Xylene	48 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	91.7%
Bromobenzene	75.3%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080015-0090

Lab Sample ID: T588C
LIMS ID: 97-15043
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 28.7%

Sample Amount: 0.041 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	61 U
108-88-3	Toluene	240 Y
100-41-4	Ethylbenzene	61 U
	m,p-Xylene	61 U
95-47-6	o-Xylene	61 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	85.1%
Bromobenzene	74.1%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080016-0030

Lab Sample ID: T588D
LIMS ID: 97-15044
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 5.7%

Sample Amount: 0.053 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	47 U
108-88-3	Toluene	190 Y
100-41-4	Ethylbenzene	47 U
	m,p-Xylene	47 U
95-47-6	o-Xylene	47 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	85.2%

Data Qualifiers

U Indicates compound was analyzed for, but not detected at the given detection limit.
J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
B Found in associated method blank.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080016-0060

Lab Sample ID: T588E
LIMS ID: 97-15045
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 22.5%

Sample Amount: 0.040 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	63 U
108-88-3	Toluene	250 Y
100-41-4	Ethylbenzene	63 U
	m,p-Xylene	63 U
95-47-6	o-Xylene	63 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	90.4%
Bromobenzene	76.5%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080016-0090

Lab Sample ID: T588F
LIMS ID: 97-15046
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized: JMB
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 37.4%

Sample Amount: 0.033 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	76 U
108-88-3	Toluene	300 Y
100-41-4	Ethylbenzene	76 U
	m,p-Xylene	76 U
95-47-6	o-Xylene	76 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	88.0%
Bromobenzene	76.6%

Data Qualifiers

U Indicates compound was analyzed for, but not detected at the given detection limit.
J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
B Found in associated method blank.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080017-0030

Lab Sample ID: T588G
LIMS ID: 97-15047
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized: AJB
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 7.8%

Sample Amount: 0.050 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	50 U
108-88-3	Toluene	200 Y
100-41-4	Ethylbenzene	50 U
	m,p-Xylene	50 U
95-47-6	o-Xylene	50 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	88.3%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080017-0065

Lab Sample ID: T588H
LIMS ID: 97-15048
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: 10.9%

Sample Amount: 0.047 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	53 U
108-88-3	Toluene	210 Y
100-41-4	Ethylbenzene	53 U
	m,p-Xylene	53 U
95-47-6	o-Xylene	53 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	91.2%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-080017-0090

Lab Sample ID: T588I
LIMS ID: 97-15049
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: 08/27/97
Date Received: 08/27/97

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/05/97
Percent Moisture: 19.1%

Sample Amount: 0.052 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	48 U
108-88-3	Toluene	190 Y
100-41-4	Ethylbenzene	48 U
	m,p-Xylene	48 U
95-47-6	o-Xylene	48 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	91.3%
Bromobenzene	79.6%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: Method Blank

Lab Sample ID: T588MB
LIMS ID: 97-15041
Matrix: Soil

QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 09/09/97

Date analyzed: 09/04/97
Percent Moisture: NA

Sample Amount: 0.050 g Equiv
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	50 U
108-88-3	Toluene	200 Y
100-41-4	Ethylbenzene	50 U
	m,p-Xylene	50 U
95-47-6	o-Xylene	50 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	96.6%
Bromobenzene	79.8%

Data Qualifiers

U Indicates compound was analyzed for, but not detected at the given detection limit.
J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
B Found in associated method blank.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: T588E
LIMS ID: 97-15045
Matrix: Soil

Sample No: SB-080016-0060
QC Report No: T588-Boeing Corporate SHEA
Project: 03709-034-403-0001-00

Date Received: 08/27/97

Data Release Authorized: BNB
Reported: 09/09/97

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date Analyzed: 09/04/97

CONSTITUENT	SAMPLE VALUE	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
MATRIX SPIKE					
Benzene	< 63.3	2740	2960	92.6%	
Toluene	< 253	2790	2960	94.3%	
Ethylbenzene	< 63.3	2780	2960	93.9%	
m,p-Xylene	< 63.3	5470	5910	92.6%	
o-Xylene	< 63.3	2800	2960	94.6%	
MATRIX SPIKE DUPLICATE					
Benzene	< 63.3	2830	2990	94.6%	2.2%
Toluene	< 253	2900	2990	97.0%	2.8%
Ethylbenzene	< 63.3	2860	2990	95.7%	1.9%
m,p-Xylene	< 63.3	5650	5980	94.5%	2.1%
o-Xylene	< 63.3	2860	2990	95.7%	1.2%

BETX SURROGATE RECOVERIES	MATRIX SPIKE	MATRIX SPIKE DUPLICATE
Trifluorotoluene	87.8%	94.7%
Bromobenzene	83.5%	88.1%

Reported in Total ug/kg Dry Weight (ppb)

BETX SPIKE CONTROL LIMITS

Percent Recovery	75-130%
Duplicate RPD	<30%

APPENDIX B

EXCAVATED AREA
SOIL SAMPLING DATA

Chain of Custody Record & Laboratory Analysis Request

OA-3

Date: 3/26/98

Page 1 of

Number of coolers: 1

ANALYTICAL RESOURCES INCORPORATED
333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ARI Client: Weston (Billing) Phone #: 206-521-7668

Client Contact: Larry Vanselow / R. McGinnis

Client Project ID: 03709-034-410-0002-00

Samplers: Sturim

	Sample ID	Date	Time	Matx	No Cont	Lab ID	Analysis Required: BTEX	TPH-G						Notes/Comments
1	SB08032-0060	3/24/98	1255	Soil	1		✓	✓						
2	SB08033-0055	3/26/98	1520	Soil	1		✓	✓						
3	SB08034-0080	3/26/98	1530	Soil	1		✓	✓						
4														
5														
6														
7														

Comments/Special Instructions:

Quick Turn-around time... ...results by Monday?

	Relinquished by: (Signature)	Relinquished by: (Signature)	Relinquished by: (Signature)
Printed Name:	Richard Sturim		
Company:	Roy F. Weston, Inc.		
Date: / Time:	3/26/98 1615		
Received by: (Signature)	Amy Bergin		
Printed Name:	Amy Bergin		
Company:	ARI		
Date: / Time:	3/26/98 1620		

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following Standard Operating Procedures and our Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the client.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

2 April 1998

Rudy Rogers
The Boeing Company
P.O. Box 3707, M/S 19-16
Seattle, WA 98124-2207

RE: Project: 03709-034-410-0002-00
ARI Job V838

Dear Rudy,

Please find enclosed original chain of custody records and analytical results for the above referenced project. Analytical Resources, Inc. accepted three soil samples in good condition on March 17, 1998.

The samples were analyzed for BTEX and TPH-gasoline referencing US EPA SW-846 method 8020 and 8015-gasoline, respectively. Quality control analysis results are included for your review.

No analytical complications were noted. Copies of the reports and all associated raw data will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Jeff M. Bain for Jeff Reitan

Jeff J. Reitan
Project Manager
jeff@arilabs.com

JJR/jmb
Enclosure

Cc: Joe Johnson, The Boeing Company, M/S 7A-XA
Roger N. McGinnis, Roy F. Weston (Seattle, WA)

Chain of Custody Record & Laboratory Analysis Request

BOEING
Joe Johnson
Rudy Rogers

Date: 3/26/98

Page 1 of ____

Number of coolers: 1

5.0

ANALYTICAL RESOURCES INCORPORATED
333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

4

ARI Client: Weston (Boeing) Phone #: 206-521-7668

Client Contact: Larry Vaseleon/R. McGinnis

Client Project ID: 03709-034-410-0002-00

Samplers: Sturm

	Sample ID	Date	Time	Matx	No Cont	Lab ID	Analysis Required: BTEX	TPH-G						Notes/Comments
1	SB08032-0060	3/26/98	1255	Soil	1		✓	✓						98-5776 to 98-5778 V838
2	SB08033-0055	3/26/98	1520	Soil	1		✓	✓						
3	SB08034-0080	3/26/98	1530	Soil	1		✓	✓						
4														
5														
6														
7														

Comments/Special Instructions:

Quick Turn-around time ... ... results by Monday?

	Relinquished by: (Signature)	Relinquished by: (Signature)	Relinquished by: (Signature)
	Printed Name: RICHARD STURM	Printed Name:	Printed Name:
	Company: ROY F. WESTON, INC.	Company:	Company:
	Date: 3/26/98 Time: 1615	Date: Time:	Date: Time:
	Received by: (Signature) Amy Bergin	Received by: (Signature)	Received by: (Signature)
	Printed Name: Amy Bergin	Printed Name:	Printed Name:
	Company: ARI	Company:	Company:
	Date: 3/26/98 Time: 1620	Date: Time:	Date: Time:

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

QC Report No: V838-Boeing Plant II
Matrix: Soil Project: 03709-034-410-0002-00

CK 4/14/98

Data Release Aut rized: Date Received: 03/26/98
Reported: 04/0[illegible] 3

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range Hydrocarbons		Gasoline ID	Surr A Rec	Surr B Rec
V838-0330MB	Method Blank	03/30/98	1:1	5.0	U	NO	103.%	106.%
98-5776-V838A	SB08032-0060	03/30/98	1:1	6.2	U	NO	93.4%	87.3%
98-5777-V838B	SB08033-0055	03/30/98	1:1	5.6	U	NO	96.2%	95.7%
98-5778-V838C	SB08034-0080	03/30/98	1:1	5.8	U	NO	95.9%	95.0%

rpm
4/7/98

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.
Values reported in ppm (mg/kg) on a dry weight basis.
Quantitation on total peaks in the gasoline range from Toluene to C12.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

Lab Sample ID: V838SB
LIMS ID: 98-5776
Matrix: Soil

QC Report No: V838-Boeing Plant II
Project: 03709-034-410-0002-00

Data Release Authorized: CK 4/2/98
Reported: 04/02/98

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Analyzed 03/30/98

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
LABORATORY CONTROL SAMPLE			
Gasoline Range Hydrocarbons	2.48	2.5	99.2%

TPHg Surrogate Recovery

Trifluorotoluene	118%
Bromobenzene	NR

Values reported in parts per million (mg/kg)

TPHg SPIKE CONTROL LIMITS

Percent Recovery 80.0-120%

Advisory QA Limits

RMM 4/7/98

FORM-III

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: Method Blank

Lab Sample ID: V838MB
LIMS ID: 98-5776
Matrix: Soil

QC Report No: V838-Boeing Plant II
Project: 03709-034-410-0002-00

Date Sampled: NA
Date Received: NA

Data Release Authorized: CH 4/2/98
Reported: 04/02/98

Date analyzed: 03/30/98
Percent Moisture: NA

Sample Amount: 0.050 g Equiv
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	50 U
108-88-3	Toluene	50 U
100-41-4	Ethylbenzene	50 U
	m,p-Xylene	50 U
95-47-6	o-Xylene	50 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	103%

RMM 4/7/98

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB08032-0060

Lab Sample ID: V838A
LIMS ID: 98-5776
Matrix: Soil

QC Report No: V838-Boeing Plant II
Project: 03709-034-410-0002-00

Date Sampled: 03/26/98
Date Received: 03/26/98

Data Release Authorized: CLT 4/1-/98
Reported: 04/02/98

Date analyzed: 03/30/98
Percent Moisture: 22.9%

Sample Amount: 0.040 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	62 U
108-88-3	Toluene	62 U
100-41-4	Ethylbenzene	62 U
	m,p-Xylene	**100**
95-47-6	o-Xylene	62 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	91.6%
Bromobenzene	87.0%

RMM 4/7/98

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB08033-0055

Lab Sample ID: V838B
LIMS ID: 98-5777
Matrix: Soil

QC Report No: V838-Boeing Plant II
Project: 03709-034-410-0002-00

Date Sampled: 03/26/98
Date Received: 03/26/98

Data Release Authorized: CH 4/1/98
Reported: 04/02/98

Date analyzed: 03/30/98
Percent Moisture: 13.4%

Sample Amount: 0.045 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	56 U
108-88-3	Toluene	56 U
100-41-4	Ethylbenzene	56 U
	m,p-Xylene	56 U
95-47-6	o-Xylene	56 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	95 5%
Bromobenzene	95.4%

JRM 4/1/98

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB08034-0080

Lab Sample ID: V838C
LIMS ID: 98-5778
Matrix: Soil

QC Report No: V838-Boeing Plant II
Project: 03709-034-410-0002-00

Date Sampled: 03/26/98
Date Received: 03/26/98

Data Release Authorized: clt
Reported: 04/02/98 4/2/98

Date analyzed: 03/30/98
Percent Moisture: 16.1%

Sample Amount: 0.043 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	58 U
108-88-3	Toluene	58 U
100-41-4	Ethylbenzene	58 U
	m,p-Xylene	58 U
95-47-6	o-Xylene	58 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	94.3%
Bromobenzene	94.8%

rnm
4/7/98

Data Qualifiers

U Indicates compound was analyzed for, but not detected at the given detection limit.
J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
B Found in associated method blank.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

Lab Sample ID: V838B
LIMS ID: 98-5777
Matrix: Soil

Sample No: SB08033-0055
QC Report No: V838-Boeing Plant II
Project: 03709-034-410-0002-00

Date Received: 03/26/98

Data Release Authorized: CH
Reported: 04/02/98 4/2/98

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date Analyzed: 03/30/98

CONSTITUENT	SAMPLE VALUE	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
MATRIX SPIKE					
Benzene	< 55.6	2850	3230	88.2%	
Toluene	< 55.6	2790	3230	86.4%	
Ethylbenzene	< 55.6	2810	3230	87.0%	
m,p-Xylene	< 55.6	5640	6450	87.4%	
o-Xylene	< 55.6	2800	3230	86.7%	
MATRIX SPIKE DUPLICATE					
Benzene	< 55.6	2890	3300	87.6%	0.7%
Toluene	< 55.6	2870	3300	87.0%	0.7%
Ethylbenzene	< 55.6	2870	3300	87.0%	0.0%
m,p-Xylene	< 55.6	5830	6600	88.3%	1.0%
o-Xylene	< 55.6	2870	3300	87.0%	0.4%

BETX SURROGATE RECOVERIES	MATRIX SPIKE	MATRIX SPIKE DUPLICATE
Trifluorotoluene	97.9%	95.3%
Bromobenzene	98.2%	94.6%

Reported in Total ug/kg Dry Weight (ppb)

BETX SPIKE CONTROL LIMITS

Percent Recovery 75-130%
Duplicate RPD <30%

RWM 4/7/98

SOIL BETX SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Soil

QC Report No: V838

LIMS ID	Lab ID	Client ID	TFT	BB	TOT OUT
98-5776MB	033098MB	Method Blank	102%	103%	0
98-5776	V838A	SB08032-0060	92%	87%	0
98-5777	V838B	SB08033-0055	96%	95%	0
98-5777	V838B-MS	SB08033-0055-MS	98%	98%	0
98-5777	V838B-MSD	SB08033-0055-MSD	95%	95%	0
98-5778	V838C	SB08034-0080	94%	95%	0

	MB/LCS QC LIMITS	SAMPLE QC LIMITS
(TFT) = Trifluorotoluene	(84-106)	(85-113)
(BB) = Bromobenzene	(82-110)	(68-121)

RMM
4/7/98

Limits Updated - 02/15/97

* Values outside of advisory QC limits

D System Monitoring Compound diluted out

FORM-II BETX

ANALYTICAL
RESOURCES
INCORPORATED

SOIL TPHg SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Soil QC Report No: V838

LIMS ID	Lab ID	Client ID	TFT	BB	TOT OUT
98-5776MB	033098MB	Method Blank	103%	106%	0
98-5776LC	033098LC	Lab Control	118%	NR	0
98-5776	V838A	SB08032-0060	93%	87%	0
98-5777	V838B	SB08033-0055	96%	96%	0
98-5778	V838C	SB08034-0080	96%	95%	0

	MB/LCS QC LIMITS	SAMPLE QC LIMITS
(TFT) = Trifluorotoluene	(58-151)	(30-160)
(BB) = Bromobenzene	(36-160)	(30-160)

RPM 4/7/98

Limits Updated - 02/15/97

\# Column to be used to flag recovery values

D System Monitoring Compound diluted out

FORM-II TPHg

Chain of Custody Record & Laboratory Analysis Request

Date: 5-18-98
Page 1 of 1
Number of coolers: 1
Cooler Temp: N/A
Rad. Survey:

Analytical Resources, Incorporated
Analytical Chemist and Consultants
400 Ninth Avenue North
Seattle, WA 98109-4708
(206) 621-6490
(206) 621-7523 (Fax)

ARI Client: BOEING / WESTON Phone#: 921-7600

Client Contact: R. ROGERS / R. MCGINNIS

Client Project ID: 03709-034-470-0001-00 / BLDG. 2-80

Samplers: LOTTSFELDT, E

	Sample ID	Date	Time	Matx	No Cont	Lab ID	BTEX via 8021	W-TPHG						Notes/Comments
							Analysis Required							
1	SB-08037-0080	5/18	1049	S	2		X	X						98-9933 to 98-9935 W351
2	SB-08036-0060	"	1052	S	2		X	X						
3	SB-08035-0060	"	1054	S	2		X	X						
4														
5														
6														
7														

ARI Project No:

Comments/Special Instructions:

24 HR TAT

MANHOLE EXCAVATION NEAR OA3

Relinquished by: (Signature)	Erik Lottsfeldt	Relinquished by: (Signature)	Relinquished by: (Signature)
Printed Name:	ERIK LOTTSFELDT	Printed Name:	Printed Name:
Company:	WESTON, INC.	Company:	Company:
Date: 5-18-98	Time: 1626	Date: Time:	Date: Time:
Received by: (Signature)		Received by: (Signature)	Received by: (Signature)
Printed Name:	ZACH STANLEY	Printed Name:	Printed Name:
Company:	ARI	Company:	Company:
Date: 5/18/98	Time: 1635	Date: Time:	Date: Time:

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

QC Report No: W351-Boeing
Matrix: Soil Project: Bldg 2-80
03709-034-470-0001-00
Data Release Authorized: CH 5/20/98 Date Received: 05/18/98
Reported: 05/20/98

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range Hydrocarbons		Gasoline ID	Surr A Rec	Surr B Rec
W351-0519MB	Method Blank	05/19/98	1:1	5.0	U	NO	91.8%	80.8%
98-9933-W351A	**SB-08037-0080**	05/19/98	1:1	**130**		NO	97.7%	92.8%
98-9934-W351B	SB-08036-0060	05/19/98	1:1	5.3	U	NO	92.5%	85.8%
98-9935-W351C	SB-08035-0060	05/19/98	1:1	5.3	U	NO	91.2%	82.8%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.
Values reported in ppm (mg/kg) on a dry weight basis.
Quantitation on total peaks in the gasoline range from Toluene to C12.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

SOIL TPHg SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Soil CH s/no/91 QC Report No: W351

LIMS ID	Lab ID	Client ID	TFT	BB	TOT OUT
98-9933MB	051998MB	Method Blank	92%	81%	0
98-9933	W351A	SB-08037-0080	98%	93%	0
98-9934	W351B	SB-08036-0060	92%	86%	0
98-9935	W351C	SB-08035-0060	91%	83%	0

	MB/LCS QC LIMITS	SAMPLE QC LIMITS
(TFT) = Trifluorotoluene	(58-151)	(30-160)
(BB) = Bromobenzene	(36-160)	(30-160)

Limits Updated - 02/15/97

\# Column to be used to flag recovery values

D System Monitoring Compound diluted out

FORM-II TPHg

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-08035-0060

Lab Sample ID: W351C
LIMS ID: 98-9935
Matrix: Soil

QC Report No: W351-Boeing
Project: Bldg 2-80
03709-034-470-0001-00
Date Sampled: 05/18/98
Date Received: 05/18/98

Data Release Authorized: CH 5/20/98
Reported: 05/20/98

Date analyzed: 05/19/98
Percent Moisture: 6.4%

Sample Amount: 0.047 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	53 U
108-88-3	Toluene	53 U
100-41-4	Ethylbenzene	53 U
	m,p-Xylene	53 U
95-47-6	o-Xylene	53 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	96.9%
Bromobenzene	85.9%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-08036-0060

Lab Sample ID: W351B
LIMS ID: 98-9934
Matrix: Soil

QC Report No: W351-Boeing
Project: Bldg 2-80
03709-034-470-0001-00
Date Sampled: 05/18/98
Date Received: 05/18/98

Data Release Authorized: ck 5/20/98
Reported: 05/20/98

Date analyzed: 05/19/98
Percent Moisture: 7.4%

Sample Amount: 0.047 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	53 U
108-88-3	Toluene	53 U
100-41-4	Ethylbenzene	53 U
	m,p-Xylene	**120**
95-47-6	o-Xylene	53 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	89.0%

Data Qualifiers

U Indicates compound was analyzed for, but not detected at the given detection limit.
J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
B Found in associated method blank.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: SB-08037-0080

Lab Sample ID: W351A
LIMS ID: 98-9933
Matrix: Soil

QC Report No: W351-Boeing
Project: Bldg 2-80
03709-034-470-0001-00
Date Sampled: 05/18/98
Date Received: 05/18/98

Data Release Authorized: CH 5/20/98
Reported: 05/20/98

Date analyzed: 05/19/98
Percent Moisture: 30.8%

Sample Amount: 0.035 g
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	71 U
108-88-3	Toluene	71 U
100-41-4	**Ethylbenzene**	**2,200**
	m,p-Xylene	**1,800**
95-47-6	**o-Xylene**	**810**

BETX 8020 Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	94.9%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

ANALYTICAL RESOURCES INCORPORATED

Sample No: Method Blank

Lab Sample ID: W351MB
LIMS ID: 98-9933
Matrix: Soil

QC Report No: W351-Boeing
Project: Bldg 2-80
03709-034-470-0001-00
Date Sampled: NA
Date Received: NA

Data Release Authorized: cH 5/20/98
Reported: 05/20/98

Date analyzed: 05/19/98
Percent Moisture: NA

Sample Amount: 0.050 g Equiv
Dilution Factor: 1

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
71-43-2	Benzene	50 U
108-88-3	Toluene	50 U
100-41-4	Ethylbenzene	50 U
	m,p-Xylene	50 U
95-47-6	o-Xylene	50 U

BETX 8020 Surrogate Recovery

Trifluorotoluene	98.9%
Bromobenzene	86.0%

Data Qualifiers

U	Indicates compound was analyzed for, but not detected at the given detection limit.
J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
B	Found in associated method blank.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method 8020

Lab Sample ID: W351SB
LIMS ID: 98-9933
Matrix: Soil

QC Report No: W351-Boeing
Project: Bldg 2-80
03709-034-470-0001-00

Data Release Authorized: ok 5/20/98
Reported: 05/20/98

LABORATORY CONTROL SAMPLE
Date analyzed: 05/19/98

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
Benzene	25.5	25.0	102%
Toluene	25.8	25.0	103%
Ethylbenzene	24.8	25.0	99.2%
m,p-Xylene	51.0	50.0	102%
o-Xylene	24.9	25.0	99.6%

BETX SURROGATE RECOVERIES

Trifluorotoluene	102 %
Bromobenzene	89.2%

Reported in Total ug/kg Dry Weight (ppb)

BETX SPIKE CONTROL LIMITS

Percent Recovery 75-130%

ANALYTICAL
RESOURCES
INCORPORATED

SOIL BETX SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Soil CH 5/1-19/1 QC Report No: W351

LIMS ID	Lab ID	Client ID	TFT	BB	TOT OUT
98-9933MB	051998MB	Method Blank	99%	86%	0
98-9933LC	051998LC	Lab Control	102%	89%	0
98-9933	W351A	SB-08037-0080	104%	95%	0
98-9934	W351B	SB-08036-0060	101%	89%	0
98-9935	W351C	SB-08035-0060	97%	86%	0

	MB/LCS QC LIMITS	SAMPLE QC LIMITS
(TFT) = Trifluorotoluene	(84-106)	(85-113)
(BB) = Bromobenzene	(82-110)	(68-121)

Limits Updated - 02/15/97

* Values outside of advisory QC limits

D System Monitoring Compound diluted out

FORM-II BETX

APPENDIX C

STOCKPILED SOIL SAMPLING DATA

ENVIRONMENTAL ANALYSIS LABORATORY
Boeing Commercial Airplane Group
P O Box 3707, MS 72-04
Seattle, WA 98124-2207
Ph. 237-1051

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD/LABORATORY ANALYSIS REQUEST

(Shaded areas to be completed by lab personnel)

REPORT TO: Rudy Rogers, John Turvey | ORGN.: | MAIL STOP: 19-16 | PHONE: 655-8344 | CHARGELINE/CONTROL NUMBER: PLZ OA3 IM

CC: | ORGN.: | MAIL STOP: | SAMPLERS: Mike Gleason, Rich Stein (Weston)

SAMPLE DESCRIPTION AND LOCATION	SAMP DATE	TIME	MATX	COLL TYPE	No. CONT	LAB ID	ANALYSIS REQUESTED (Use codes on back to indicate tests.)
1. PLZSA-1392	3/31/98	1125	S	G	4	[redacted]	Tot Metals, Tot. VOA, Semi VOA, TPH, PCB
2. PLZSA-1393	3/31/98	1130	S	G	4	[redacted]	↓
3. PLZSA-1394	↓	1135	S	G	4	[redacted]	
4. PLZSA-1395		1140	S	G	4	[redacted]	
5. PLZSA-1396		1145	S	G	4	[redacted]	
6. PLZSA-1397		1150	S	G	4	[redacted]	
7.						[redacted]	
8. STD TAT						[redacted]	
9.						[redacted]	Tot Metals, VOAs - run
10.						[redacted]	TCLP if totals are elevated

Comments/Special Instructions:
Soil stockpiles from OA3 Interim Measure
Stockpile 1 - PLZSA - 1392, 1393, 1394
Stockpile 2 - PLZSA - 1395, 1396, 1397

Relinquished by (SIGNATURE)	Relinquished by (SIGNATURE)	Relinquished by (SIGNATURE)
[signature]		
Printed Name: ERIK LOTTSFELDT	Printed Name:	Printed Name:
Date: 3-31-98 Time: 1533	Date: Time:	Date: Time:
Received by: [signature]	Received by:	Received by:
Printed Name: Lisa Gaul	Printed Name:	Printed Name:
Date: 3/31/98 Time: 3:30	Date: Time:	Date: Time:

X-27775C ORIG. 11/96

Fax Leader
The Boeing Company

To: Larry Vanselow
Company: Weston
Location:
Fax No. 206 521-7601
Telephone No.
Mailstop:
Comments

No. of Pages: 7
Today's Date: 4/16/98
From: Lisa Gaul
Company: Boeing
Location:
Fax No. 425-965-0224
Telephone No. 425 965-0021
Mailstop: 72-04
Orgn. No.
Bldg. No.
Original Disposition: ☐ Destroy ☐ Return ☐ Call for pickup

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 98-B230
Field Id No.: PL2SA-1392

Field Notes: Stock pile 1

Analyte	Result	Units	Method #	Analyst	Date	Status
PCB:	< 0.05	ppm	8080	KSC	4/ 2/98	
Total Pet. Hydrocarbo:	23.00	ppm	418.1	Mike	4/ 1/98	
Arsenic:	1.84	mg/Kg	200.7	Paula	4/ 1/98	
Barium:	17.75	mg/Kg	200.7	Paula	4/ 1/98	
Cadmium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Chromium:	11.50	mg/Kg	200.7	Paula	4/ 1/98	
Copper:	12.85	mg/Kg	200.7	Paula	4/ 1/98	
Lead:	4.46	mg/Kg	200.7	Paula	4/ 1/98	
Mercury:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Nickel:	7.90	mg/Kg	200.7	Paula	4/ 1/98	
Selenium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Silver:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Zinc:	20.83	mg/Kg	200.7	Paula	4/ 1/98	
Iron:	9371.00	mg/Kg	200.7	Paula	4/ 1/98	
Calcium:	3707.00	mg/Kg	200.7	Paula	4/ 1/98	
Thallium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Sodium:	698.10	mg/Kg	200.7	Paula	4/ 1/98	
Magnesium:	2038.00	mg/Kg	200.7	Paula	4/ 1/98	
Aluminum:	8285.00	mg/Kg	200.7	Paula	4/ 1/98	
Manganese:	79.87	mg/Kg	200.7	Paula	4/ 1/98	
Beryllium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Cobalt:	4.84	mg/Kg	200.7	Paula	4/ 1/98	
Bismuth:	10.84	mg/Kg	200.7	Paula	4/ 1/98	
Vanadium:	26.55	mg/Kg	200.7	Paula	4/ 1/98	
Benzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Toluene:	< 10	ppb	602/624	Ed	4/ 1/98	
Ethylbenzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Methylene Chloride:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Chloroform:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Trichloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
Tetrachloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,2,2 Tetrachloroet:	< 10	ppb	601/624	Ed	4/ 1/98	
Acetone:	< 100	ppb	602	Ed	4/ 1/98	
o-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	
m&p-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	

Report prepared by: Lisa Gaul Date: 4/ 2/98

Report approved by: Linda Chriquette Date: 4/2/98

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 98-B231
Field Id No.: PL2SA-1393

Field Notes: Stock pile 1

Analyte	Result	Units	Method #	Analyst	Date	Status
PCB:	< 0.05	ppm	8080	KSC	4/ 2/98	
Total Pet. Hydrocarbo:	48.00	ppm	418.1	Mike	4/ 1/98	
Arsenic:	1.44	mg/Kg	200.7	Paula	4/ 1/98	
Barium:	31.80	mg/Kg	200.7	Paula	4/ 1/98	
Cadmium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Chromium:	17.43	mg/Kg	200.7	Paula	4/ 1/98	
Copper:	16.67	mg/Kg	200.7	Paula	4/ 1/98	
Lead:	15.45	mg/Kg	200.7	Paula	4/ 1/98	
Mercury:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Nickel:	16.67	mg/Kg	200.7	Paula	4/ 1/98	
Selenium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Silver:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Zinc:	50.67	mg/Kg	200.7	Paula	4/ 1/98	
Iron:	11970.0	mg/Kg	200.7	Paula	4/ 1/98	
Calcium:	4554.00	mg/Kg	200.7	Paula	4/ 1/98	
Thallium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Sodium:	522.30	mg/Kg	200.7	Paula	4/ 1/98	
Magnesium:	2776.00	mg/Kg	200.7	Paula	4/ 1/98	
Aluminum:	8915.00	mg/Kg	200.7	Paula	4/ 1/98	
Manganese:	150.50	mg/Kg	200.7	Paula	4/ 1/98	
Beryllium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Cobalt:	7.34	mg/Kg	200.7	Paula	4/ 1/98	
Bismuth:	12.42	mg/Kg	200.7	Paula	4/ 1/98	
Vanadium:	33.88	mg/Kg	200.7	Paula	4/ 1/98	
Benzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Toluene:	< 10	ppb	602/624	Ed	4/ 1/98	
Ethylbenzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Methylene Chloride:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Chloroform:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Trichloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
Tetrachloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,2,2 Tetrachloroet:	< 10	ppb	601/624	Ed	4/ 1/98	
Acetone:	< 100	ppb	602	Ed	4/ 1/98	
o-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	
m&p-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	

Report prepared by: Lisa Leach Date: 4/ 2/98

Report approved by: Linda Chiquatte Date: 4/2/98

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 98-B232
Field Id No.: PL2SA-1394

Field Notes: Stock pile 1

Analyte	Result	Units	Method #	Analyst	Date	Status
PCB:	< 0.05	ppm	8080	KSC	4/ 2/98	
Total Pet. Hydrocarbo:	81.00	ppm	418.1	Mike	4/ 1/98	
Arsenic:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Barium:	28.45	mg/Kg	200.7	Paula	4/ 1/98	
Cadmium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Chromium:	15.43	mg/Kg	200.7	Paula	4/ 1/98	
Copper:	12.63	mg/Kg	200.7	Paula	4/ 1/98	
Lead:	16.15	mg/Kg	200.7	Paula	4/ 1/98	
Mercury:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Nickel:	11.80	mg/Kg	200.7	Paula	4/ 1/98	
Selenium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Silver:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Zinc:	60.88	mg/Kg	200.7	Paula	4/ 1/98	
Iron:	11310.0	mg/Kg	200.7	Paula	4/ 1/98	
Calcium:	4449.00	mg/Kg	200.7	Paula	4/ 1/98	
Thallium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Sodium:	682.30	mg/Kg	200.7	Paula	4/ 1/98	
Magnesium:	2413.00	mg/Kg	200.7	Paula	4/ 1/98	
Aluminum:	9194.00	mg/Kg	200.7	Paula	4/ 1/98	
Manganese:	129.90	mg/Kg	200.7	Paula	4/ 1/98	
Beryllium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Cobalt:	6.44	mg/Kg	200.7	Paula	4/ 1/98	
Bismuth:	14.42	mg/Kg	200.7	Paula	4/ 1/98	
Vanadium:	34.37	mg/Kg	200.7	Paula	4/ 1/98	
Benzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Toluene:	< 10	ppb	602/624	Ed	4/ 1/98	
Ethylbenzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Methylene Chloride:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Chloroform:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Trichloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
Tetrachloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,2,2 Tetrachloroet:	< 10	ppb	601/624	Ed	4/ 1/98	
Acetone:	< 100	ppb	602	Ed	4/ 1/98	
o-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	
m&p-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	

Report prepared by: Lisa Ford Date: 4/ 2/98

Report approved by: Linda Chicquette Date: 4/2/98

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 98-B233
Field Id No.: PL2SA-1395

Field Notes: Stock pile 2

Analyte	Result	Units	Method #	Analyst	Date	Status
PCB:	< 0.05	ppm	8080	KSC	4/ 2/98	
Total Pet. Hydrocarbo:	46.00	ppm	418.1	Mike	4/ 1/98	
Arsenic:	1.04	mg/Kg	200.7	Paula	4/ 1/98	
Barium:	20.94	mg/Kg	200.7	Paula	4/ 1/98	
Cadmium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Chromium:	13.15	mg/Kg	200.7	Paula	4/ 1/98	
Copper:	15.08	mg/Kg	200.7	Paula	4/ 1/98	
Lead:	7.54	mg/Kg	200.7	Paula	4/ 1/98	
Mercury:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Nickel:	9.10	mg/Kg	200.7	Paula	4/ 1/98	
Selenium:	2.36	mg/Kg	200.7	Paula	4/ 1/98	
Silver:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Zinc:	39.11	mg/Kg	200.7	Paula	4/ 1/98	
Iron:	9947.00	mg/Kg	200.7	Paula	4/ 1/98	
Calcium:	3867.00	mg/Kg	200.7	Paula	4/ 1/98	
Thallium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Sodium:	691.00	mg/Kg	200.7	Paula	4/ 1/98	
Magnesium:	2041.00	mg/Kg	200.7	Paula	4/ 1/98	
Aluminum:	8265.00	mg/Kg	200.7	Paula	4/ 1/98	
Manganese:	86.90	mg/Kg	200.7	Paula	4/ 1/98	
Beryllium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Cobalt:	5.19	mg/Kg	200.7	Paula	4/ 1/98	
Bismuth:	6.16	mg/Kg	200.7	Paula	4/ 1/98	
Vanadium:	32.56	mg/Kg	200.7	Paula	4/ 1/98	
Benzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Toluene:	< 10	ppb	602/624	Ed	4/ 1/98	
Ethylbenzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Methylene Chloride:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Chloroform:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Trichloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
Tetrachloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,2,2 Tetrachloroet:	< 10	ppb	601/624	Ed	4/ 1/98	
Acetone:	< 100	ppb	602	Ed	4/ 1/98	
o-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	
m&p-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	

Report prepared by: Lisa Burd Date: 4/ 2/98

Report approved by: Linda Chicquette Date: 4/2/98

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 98-B234
Field Id No.: PL2SA-1396

Field Notes: Stock pile 2

Analyte	Result	Units	Method #	Analyst	Date	Status
PCB:	< 0.05	ppm	8080	KSC	4/ 2/98	
Total Pet. Hydrocarbo:	44.00	ppm	418.1	Mike	4/ 1/98	
Arsenic:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Barium:	21.80	mg/Kg	200.7	Paula	4/ 1/98	
Cadmium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Chromium:	11.98	mg/Kg	200.7	Paula	4/ 1/98	
Copper:	10.37	mg/Kg	200.7	Paula	4/ 1/98	
Lead:	11.38	mg/Kg	200.7	Paula	4/ 1/98	
Mercury:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Nickel:	8.16	mg/Kg	200.7	Paula	4/ 1/98	
Selenium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Silver:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Zinc:	39.02	mg/Kg	200.7	Paula	4/ 1/98	
Iron:	9986.00	mg/Kg	200.7	Paula	4/ 1/98	
Calcium:	3863.00	mg/Kg	200.7	Paula	4/ 1/98	
Thallium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Sodium:	739.50	mg/Kg	200.7	Paula	4/ 1/98	
Magnesium:	1922.00	mg/Kg	200.7	Paula	4/ 1/98	
Aluminum:	8148.00	mg/Kg	200.7	Paula	4/ 1/98	
Manganese:	85.08	mg/Kg	200.7	Paula	4/ 1/98	
Beryllium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Cobalt:	5.22	mg/Kg	200.7	Paula	4/ 1/98	
Bismuth:	6.52	mg/Kg	200.7	Paula	4/ 1/98	
Vanadium:	31.32	mg/Kg	200.7	Paula	4/ 1/98	
Benzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Toluene:	< 10	ppb	602/624	Ed	4/ 1/98	
Ethylbenzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Methylene Chloride:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Chloroform:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Trichloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
Tetrachloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,2,2 Tetrachloroet:	< 10	ppb	601/624	Ed	4/ 1/98	
Acetone:	< 100	ppb	602	Ed	4/ 1/98	
o-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	
m&p-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	

Report prepared by: Lisa Gaul Date: 4/ 2/98

Report approved by: Linda Chiquette Date: 4/2/98

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 98-B235
Field Id No.: PL28A-1397

Field Notes: Stock pile 2

Analyte	Result	Units	Method #	Analyst	Date	Status
PCB:	< 0.05	ppm	8080	KSC	4/ 2/98	
Total Pet. Hydrocarbo:	623.00	ppm	418.1	Mike	4/ 1/98	
Arsenic:	1.64	mg/Kg	200.7	Paula	4/ 1/98	
Barium:	22.83	mg/Kg	200.7	Paula	4/ 1/98	
Cadmium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Chromium:	11.82	mg/Kg	200.7	Paula	4/ 1/98	
Copper:	12.25	mg/Kg	200.7	Paula	4/ 1/98	
Lead:	20.15	mg/Kg	200.7	Paula	4/ 1/98	
Mercury:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Nickel:	9.13	mg/Kg	200.7	Paula	4/ 1/98	
Selenium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Silver:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Zinc:	216.90	mg/Kg	200.7	Paula	4/ 1/98	
Iron:	9819.00	mg/Kg	200.7	Paula	4/ 1/98	
Calcium:	3885.00	mg/Kg	200.7	Paula	4/ 1/98	
Thallium:	< 0.05	mg/Kg	200.7	Paula	4/ 1/98	
Sodium:	616.30	mg/Kg	200.7	Paula	4/ 1/98	
Magnesium:	1846.00	mg/Kg	200.7	Paula	4/ 1/98	
Aluminum:	7482.00	mg/Kg	200.7	Paula	4/ 1/98	
Manganese:	88.79	mg/Kg	200.7	Paula	4/ 1/98	
Beryllium:	< 0.01	mg/Kg	200.7	Paula	4/ 1/98	
Cobalt:	5.52	mg/Kg	200.7	Paula	4/ 1/98	
Bismuth:	11.40	mg/Kg	200.7	Paula	4/ 1/98	
Vanadium:	32.16	mg/Kg	200.7	Paula	4/ 1/98	
Benzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Toluene:	< 10	ppb	602/624	Ed	4/ 1/98	
Ethylbenzene:	< 10	ppb	602/624	Ed	4/ 1/98	
Methylene Chloride:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Chloroform:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	4/ 1/98	
Trichloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
Tetrachloroethene:	< 10	ppb	601/624	Ed	4/ 1/98	
1,1,2,2 Tetrachloroet:	< 10	ppb	601/624	Ed	4/ 1/98	
Acetone:	< 100	ppb	602	Ed	4/ 1/98	
o-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	
m&p-Xylene:	< 10	ppb	602/624	Ed	4/ 1/98	

Report prepared by: Lisa Gaul Date: 4/ 2/98

Report approved by: Linda Chriquette Date: 4/2/98

BCAC FACILITIES **ENVIRONMENTAL ENGINEERING** *RENTON DIVISION*

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Requested by: Rudy Rodgers

Phone #: 655-8344

Address: Boeing

FAX#:

Project Number: PL2 093 IM

Project Name:

Project Location: Plant II

Sampler Signature:

Sample ID	Lab # (Lab use only)	# Containers	Volume/Amount	Matrix: Water	Matrix: Soil	Matrix: Sludge	Matrix: Other	Method Preserved: HCl	Method Preserved: HNO_3	Method Preserved: Ice	Method Preserved: None	Method Preserved: Other	Sampling: Date	Sampling: Time
PL2SA-1392		1			X					X			3/31/98	
PL2SA-1393		1			X					X			3/31/98	
PL2SA-1394		1			X					X			3/31/98	
PL2SA-1395		1			X					X			3/31/98	
PL2SA-1396		1			X					X			3/31/98	
PL2SA-1397		1			X					X			3/31/98	

ANALYSIS REQUEST

Sample ID	BTEX (602/8020)	BTEX/TPH as Gasoline (602/8020/8015)	Total Petroleum Hydrocarbons (418.1)	PH (150.1)	Total Oil & Grease (413.1)	TURBIDITY (180.1)	EPA 604/8040	EPA 601/8010	EPA 602/8020	EPA 608/8080–PCBs Only	EPA 624/8240	EPA 625/8270	TOTAL CYANIDE (335.3)	TC ORGANICS	TC METALS	EPA – Priority Pollutant Metals	SETTLEABLE MATTER (160.5)	PHENOLS (420.2)	OTHER	Special Handling: Priority One Service (24 hr)	Special Handling: Expedited Service (2-4 days)	Special Handling: Verbals/Fax
PL2SA-1392												X										
PL2SA-1393												X										
PL2SA-1394												X										
PL2SA-1395												X										
PL2SA-1396												X										
PL2SA-1397												X										

Relinquished by:	Date	Time	Received by:
[signature]	4/1/98	935	[signature]
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory: [signature] 4/1/98

Notes: 8-4RU276-1154

#254079

ANALYTICAL RESOURCES INCORPORATED

SOIL SEMIVOLATILE SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM

Client ID	NBZ	FBP	TPH	PHL	2FP	TBP	2CP	DCB	TOT OUT
Method Blank	64.4%	74.0%	65.1%	71.6%	67.4%	66.3%	74.9%	79.4%	0
Spike Blank	73.6%	74.2%	68.2%	75.2%	66.7%	69.5%	72.8%	75.6%	0
PL25A-1392	79.4%	76.1%	81.8%	73.0%	72.0%	85.4%	66.1%	75.0%	0
PL25A-1393	75.4%	74.8%	87.2%	70.7%	61.4%	86.3%	67.0%	78.0%	0
PL25A-1394	73.4%	71.4%	88.5%	65.3%	61.3%	80.0%	63.0%	67.8%	0
PL25A-1395	75.0%	69.8%	83.6%	71.1%	69.8%	92.8%	61.8%	67.1%	0
PL25A-1396	74.8%	73.3%	85.1%	69.3%	64.3%	93.3%	64.4%	71.6%	0
PL25A-1397	76.8%	76.6%	80.3%	79.6%	68.0%	92.9%	70.3%	78.8%	0

		LCS/MB LIMITS	QC LIMITS
(NBZ)	= Nitrobenzene-d5	(50-150)	(50-150)
(FBP)	= 2-Fluorobiphenyl	(50-150)	(50-150)
(TPH)	= p-Terphenyl-d14	(50-150)	(50-150)
(PHL)	= Phenol-d5	(50-150)	(50-150)
(2FP)	= 2-Fluorophenol	(50-150)	(50-150)
(TBP)	= 2,4,6-Tribromophenol	(50-150)	(50-150)
(2CP)	= 2-Chlorophenol-d4	(50-150)	(50-150)
(DCB)	= 1,2-Dichlorobenzene-d4	(50-150)	(50-150)

\# Column to be used to flag recovery values

* Values outside of required QC limits

D Surrogate Compound diluted out

FORM-II SVOA-1

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2
Lab Sample ID: V897A
LIMS ID: 98-6419
Matrix: Soil
Data Release Authorized: MS
Reported: 04/13/98

Sample No: PL2SA-1392

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 24.1 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 20.4%
pH: 7.0

CAS Number	Analyte	ug/kg
108-95-2	Phenol	170 U
111-44-4	Bis-(2-Chloroethyl) Ether	170 U
95-57-8	2-Chlorophenol	83 U
541-73-1	1,3-Dichlorobenzene	83 U
106-46-7	1,4-Dichlorobenzene	83 U
100-51-6	Benzyl Alcohol	420 U
95-50-1	1,2-Dichlorobenzene	83 U
95-48-7	2-Methylphenol	170 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	83 U
106-44-5	4-Methylphenol	83 U
621-64-7	N-Nitroso-Di-N-Propylamine	170 U
67-72-1	Hexachloroethane	170 U
98-95-3	Nitrobenzene	83 U
78-59-1	Isophorone	83 U
88-75-5	2-Nitrophenol	420 U
105-67-9	2,4-Dimethylphenol	250 U
65-85-0	Benzoic Acid	830 U
111-91-1	bis(2-Chloroethoxy) Methane	83 U
120-83-2	2,4-Dichlorophenol	250 U
120-82-1	1,2,4-Trichlorobenzene	83 U
91-20-3	Naphthalene	83 U
106-47-8	4-Chloroaniline	250 U
87-68-3	Hexachlorobutadiene	170 U
59-50-7	4-Chloro-3-methylphenol	170 U
91-57-6	2-Methylnaphthalene	83 U
77-47-4	Hexachlorocyclopentadiene	420 U
88-06-2	2,4,6-Trichlorophenol	420 U
95-95-4	2,4,5-Trichlorophenol	420 U
91-58-7	2-Chloronaphthalene	83 U
88-74-4	2-Nitroaniline	420 U
131-11-3	Dimethylphthalate	83 U
208-96-8	Acenaphthylene	83 U
99-09-2	3-Nitroaniline	500 U
83-32-9	Acenaphthene	83 U
51-28-5	2,4-Dinitrophenol	830 U
100-02-7	4-Nitrophenol	420 U
132-64-9	Dibenzofuran	83 U
606-20-2	2,6-Dinitrotoluene	420 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 2 of 2
Lab Sample ID: V897A
LIMS ID: 98-6419
Matrix: Soil
Data Release Authorized: EKB
Reported: 04/13/98

Sample No: PL25A-1392

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 24.1 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 20.4%
pH: 7.0

CAS Number	Analyte	ug/kg
121-14-2	2,4-Dinitrotoluene	420 U
84-66-2	Diethylphthalate	83 U
7005-72-3	4-Chlorophenyl-phenylether	83 U
86-73-7	Fluorene	83 U
100-01-6	4-Nitroaniline	420 U
534-52-1	4,6-Dinitro-2-Methylphenol	830 U
86-30-6	N-Nitrosodiphenylamine	83 U
101-55-3	4-Bromophenyl-phenylether	83 U
118-74-1	Hexachlorobenzene	83 U
87-86-5	Pentachlorophenol	420 U
85-01-8	Phenanthrene	83 U
86-74-8	Carbazole	83 U
120-12-7	Anthracene	83 U
84-74-2	Di-n-Butylphthalate	83 U
206-44-0	Fluoranthene	83 U
129-00-0	Pyrene	83 U
85-68-7	Butylbenzylphthalate	83 U
91-94-1	3,3'-Dichlorobenzidine	420 U
56-55-3	Benzo(a)anthracene	83 U
117-81-7	bis(2-Ethylhexyl)phthalate	83 U
218-01-9	Chrysene	83 U
117-84-0	Di-n-Octyl phthalate	83 U
205-99-2	Benzo(b)fluoranthene	83 U
207-08-9	Benzo(k)fluoranthene	83 U
50-32-8	Benzo(a)pyrene	83 U
193-39-5	Indeno(1,2,3-cd)pyrene	83 U
53-70-3	Dibenz(a,h)anthracene	83 U
191-24-2	Benzo(g,h,i)perylene	83 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	79.4%	d5-Phenol	73.0%
2-Fluorobiphenyl	76.1%	2-Fluorophenol	72.0%
d14-p-Terphenyl	81.8%	2,4,6-Tribromophenol	85.4%
d4-1,2-Dichlorobenzene	75.0%	d4-2-Chlorophenol	66.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2
Lab Sample ID: V897B
LIMS ID: 98-6420
Matrix: Soil
Data Release Authorized: [signature]
Reported: 04/13/98

Sample No: PL25A-1393

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.0%
pH: 7.4

CAS Number	Analyte	ug/kg
108-95-2	Phenol	150 U
111-44-4	Bis-(2-Chloroethyl) Ether	150 U
95-57-8	2-Chlorophenol	76 U
541-73-1	1,3-Dichlorobenzene	76 U
106-46-7	1,4-Dichlorobenzene	76 U
100-51-6	Benzyl Alcohol	380 U
95-50-1	1,2-Dichlorobenzene	76 U
95-48-7	2-Methylphenol	150 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	76 U
106-44-5	4-Methylphenol	76 U
621-64-7	N-Nitroso-Di-N-Propylamine	150 U
67-72-1	Hexachloroethane	150 U
98-95-3	Nitrobenzene	76 U
78-59-1	Isophorone	76 U
88-75-5	2-Nitrophenol	380 U
105-67-9	2,4-Dimethylphenol	230 U
65-85-0	Benzoic Acid	760 U
111-91-1	bis(2-Chloroethoxy) Methane	76 U
120-83-2	2,4-Dichlorophenol	230 U
120-82-1	1,2,4-Trichlorobenzene	76 U
91-20-3	Naphthalene	76 U
106-47-8	4-Chloroaniline	230 U
87-68-3	Hexachlorobutadiene	150 U
59-50-7	4-Chloro-3-methylphenol	150 U
91-57-6	2-Methylnaphthalene	76 U
77-47-4	Hexachlorocyclopentadiene	380 U
88-06-2	2,4,6-Trichlorophenol	380 U
95-95-4	2,4,5-Trichlorophenol	380 U
91-58-7	2-Chloronaphthalene	76 U
88-74-4	2-Nitroaniline	380 U
131-11-3	Dimethylphthalate	76 U
208-96-8	Acenaphthylene	76 U
99-09-2	3-Nitroaniline	460 U
83-32-9	Acenaphthene	76 U
51-28-5	2,4-Dinitrophenol	760 U
100-02-7	4-Nitrophenol	380 U
132-64-9	Dibenzofuran	76 U
606-20-2	2,6-Dinitrotoluene	380 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 2 of 2
Lab Sample ID: V897B
LIMS ID: 98-6420
Matrix: Soil
Data Release Authorized: *[signature]*
Reported: 04/13/98

Sample No: PL25A-1393

QC Report No: V897-Boeing Plant II
Project: Plant II
Pl2 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.0%
pH: 7.4

CAS Number	Analyte	ug/kg
121-14-2	2,4-Dinitrotoluene	380 U
84-66-2	Diethylphthalate	76 U
7005-72-3	4-Chlorophenyl-phenylether	76 U
86-73-7	Fluorene	76 U
100-01-6	4-Nitroaniline	380 U
534-52-1	4,6-Dinitro-2-Methylphenol	760 U
86-30-6	N-Nitrosodiphenylamine	76 U
101-55-3	4-Bromophenyl-phenylether	76 U
118-74-1	Hexachlorobenzene	76 U
87-86-5	Pentachlorophenol	380 U
85-01-8	Phenanthrene	76 U
86-74-8	Carbazole	76 U
120-12-7	Anthracene	76 U
84-74-2	Di-n-Butylphthalate	76 U
206-44-0	Fluoranthene	76 U
129-00-0	Pyrene	76 U
85-68-7	Butylbenzylphthalate	76 U
91-94-1	3,3'-Dichlorobenzidine	380 U
56-55-3	Benzo(a)anthracene	76 U
117-81-7	bis(2-Ethylhexyl)phthalate	76 U
218-01-9	Chrysene	76 U
117-84-0	Di-n-Octyl phthalate	76 U
205-99-2	Benzo(b)fluoranthene	76 U
207-08-9	Benzo(k)fluoranthene	76 U
50-32-8	Benzo(a)pyrene	76 U
193-39-5	Indeno(1,2,3-cd)pyrene	76 U
53-70-3	Dibenz(a,h)anthracene	76 U
191-24-2	Benzo(g,h,i)perylene	76 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.4%	d5-Phenol	70.7%
2-Fluorobiphenyl	74.8%	2-Fluorophenol	61.4%
d14-p-Terphenyl	87.2%	2,4,6-Tribromophenol	86.3%
d4-1,2-Dichlorobenzene	78.0%	d4-2-Chlorophenol	67.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2
Lab Sample ID: V897C
LIMS ID: 98-6421
Matrix: Soil
Data Release Authorized: *[signature]*
Reported: 04/13/98

Sample No: PL25A-1394

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.4 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.2%
pH: 7.4

CAS Number	Analyte	ug/kg
108-95-2	Phenol	150 U
111-44-4	Bis-(2-Chloroethyl) Ether	150 U
95-57-8	2-Chlorophenol	76 U
541-73-1	1,3-Dichlorobenzene	76 U
106-46-7	1,4-Dichlorobenzene	76 U
100-51-6	Benzyl Alcohol	380 U
95-50-1	1,2-Dichlorobenzene	76 U
95-48-7	2-Methylphenol	150 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	76 U
106-44-5	4-Methylphenol	76 U
621-64-7	N-Nitroso-Di-N-Propylamine	150 U
67-72-1	Hexachloroethane	150 U
98-95-3	Nitrobenzene	76 U
78-59-1	Isophorone	76 U
88-75-5	2-Nitrophenol	380 U
105-67-9	2,4-Dimethylphenol	230 U
65-85-0	Benzoic Acid	760 U
111-91-1	bis(2-Chloroethoxy) Methane	76 U
120-83-2	2,4-Dichlorophenol	230 U
120-82-1	1,2,4-Trichlorobenzene	76 U
91-20-3	Naphthalene	76 U
106-47-8	4-Chloroaniline	230 U
87-68-3	Hexachlorobutadiene	150 U
59-50-7	4-Chloro-3-methylphenol	150 U
91-57-6	2-Methylnaphthalene	76 U
77-47-4	Hexachlorocyclopentadiene	380 U
88-06-2	2,4,6-Trichlorophenol	380 U
95-95-4	2,4,5-Trichlorophenol	380 U
91-58-7	2-Chloronaphthalene	76 U
88-74-4	2-Nitroaniline	380 U
131-11-3	Dimethylphthalate	76 U
208-96-8	Acenaphthylene	76 U
99-09-2	3-Nitroaniline	460 U
83-32-9	Acenaphthene	76 U
51-28-5	2,4-Dinitrophenol	760 U
100-02-7	4-Nitrophenol	380 U
132-64-9	Dibenzofuran	76 U
606-20-2	2,6-Dinitrotoluene	380 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 2 of 2

Sample No: PL25A-1394

Lab Sample ID: V897C
LIMS ID: 98-6421
Matrix: Soil
Data Release Authorized: *ans*
Reported: 04/13/98

QC Report No: V897-Boeing Plant II
Project: Plant II
Pl2 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.4 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.2%
pH: 7.4

CAS Number	Analyte	ug/kg
121-14-2	2,4-Dinitrotoluene	380 U
84-66-2	Diethylphthalate	76 U
7005-72-3	4-Chlorophenyl-phenylether	76 U
86-73-7	Fluorene	76 U
100-01-6	4-Nitroaniline	380 U
534-52-1	4,6-Dinitro-2-Methylphenol	760 U
86-30-6	N-Nitrosodiphenylamine	76 U
101-55-3	4-Bromophenyl-phenylether	76 U
118-74-1	Hexachlorobenzene	76 U
87-86-5	Pentachlorophenol	380 U
85-01-8	Phenanthrene	76 U
86-74-8	Carbazole	76 U
120-12-7	Anthracene	76 U
84-74-2	Di-n-Butylphthalate	76 U
206-44-0	Fluoranthene	76 U
129-00-0	Pyrene	76 U
85-68-7	Butylbenzylphthalate	76 U
91-94-1	3,3'-Dichlorobenzidine	380 U
56-55-3	Benzo(a)anthracene	76 U
117-81-7	bis(2-Ethylhexyl)phthalate	76 U
218-01-9	Chrysene	76 U
117-84-0	Di-n-Octyl phthalate	76 U
205-99-2	Benzo(b)fluoranthene	76 U
207-08-9	Benzo(k)fluoranthene	76 U
50-32-8	Benzo(a)pyrene	76 U
193-39-5	Indeno(1,2,3-cd)pyrene	76 U
53-70-3	Dibenz(a,h)anthracene	76 U
191-24-2	Benzo(g,h,i)perylene	76 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	73.4%	d5-Phenol	65.3%
2-Fluorobiphenyl	71.4%	2-Fluorophenol	61.3%
d14-p-Terphenyl	88.5%	2,4,6-Tribromophenol	80.0%
d4-1,2-Dichlorobenzene	67.8%	d4-2-Chlorophenol	63.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2
Lab Sample ID: V897D
LIMS ID: 98-6422
Matrix: Soil
Data Release Authorized: *CWS*
Reported: 04/13/98

Sample No: PL25A-1395

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 24.7 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 18.9%
pH: 6.7

CAS Number	Analyte	ug/kg
108-95-2	Phenol	160 U
111-44-4	Bis-(2-Chloroethyl) Ether	160 U
95-57-8	2-Chlorophenol	81 U
541-73-1	1,3-Dichlorobenzene	81 U
106-46-7	1,4-Dichlorobenzene	81 U
100-51-6	Benzyl Alcohol	410 U
95-50-1	1,2-Dichlorobenzene	81 U
95-48-7	2-Methylphenol	160 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	81 U
106-44-5	4-Methylphenol	81 U
621-64-7	N-Nitroso-Di-N-Propylamine	160 U
67-72-1	Hexachloroethane	160 U
98-95-3	Nitrobenzene	81 U
78-59-1	Isophorone	81 U
88-75-5	2-Nitrophenol	410 U
105-67-9	2,4-Dimethylphenol	240 U
65-85-0	Benzoic Acid	810 U
111-91-1	bis(2-Chloroethoxy) Methane	81 U
120-83-2	2,4-Dichlorophenol	240 U
120-82-1	1,2,4-Trichlorobenzene	81 U
91-20-3	Naphthalene	81 U
106-47-8	4-Chloroaniline	240 U
87-68-3	Hexachlorobutadiene	160 U
59-50-7	4-Chloro-3-methylphenol	160 U
91-57-6	2-Methylnaphthalene	81 U
77-47-4	Hexachlorocyclopentadiene	410 U
88-06-2	2,4,6-Trichlorophenol	410 U
95-95-4	2,4,5-Trichlorophenol	410 U
91-58-7	2-Chloronaphthalene	81 U
88-74-4	2-Nitroaniline	410 U
131-11-3	Dimethylphthalate	81 U
208-96-8	Acenaphthylene	81 U
99-09-2	3-Nitroaniline	490 U
83-32-9	Acenaphthene	81 U
51-28-5	2,4-Dinitrophenol	810 U
100-02-7	4-Nitrophenol	410 U
132-64-9	Dibenzofuran	81 U
606-20-2	2,6-Dinitrotoluene	410 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 2 of 2
Lab Sample ID: V897D
LIMS ID: 98-6422
Matrix: Soil
Data Release Authorized: [signature]
Reported: 04/13/98

Sample No: PL25A-1395

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 24.7 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 18.9%
pH: 6.7

CAS Number	Analyte	ug/kg
121-14-2	2,4-Dinitrotoluene	410 U
84-66-2	Diethylphthalate	81 U
7005-72-3	4-Chlorophenyl-phenylether	81 U
86-73-7	Fluorene	81 U
100-01-6	4-Nitroaniline	410 U
534-52-1	4,6-Dinitro-2-Methylphenol	810 U
86-30-6	N-Nitrosodiphenylamine	81 U
101-55-3	4-Bromophenyl-phenylether	81 U
118-74-1	Hexachlorobenzene	81 U
87-86-5	Pentachlorophenol	410 U
85-01-8	Phenanthrene	81 U
86-74-8	Carbazole	81 U
120-12-7	Anthracene	81 U
84-74-2	Di-n-Butylphthalate	81 U
206-44-0	Fluoranthene	81 U
129-00-0	Pyrene	81 U
85-68-7	Butylbenzylphthalate	81 U
91-94-1	3,3'-Dichlorobenzidine	410 U
56-55-3	Benzo(a)anthracene	81 U
117-81-7	bis(2-Ethylhexyl)phthalate	81 U
218-01-9	Chrysene	81 U
117-84-0	Di-n-Octyl phthalate	81 U
205-99-2	Benzo(b)fluoranthene	81 U
207-08-9	Benzo(k)fluoranthene	81 U
50-32-8	Benzo(a)pyrene	81 U
193-39-5	Indeno(1,2,3-cd)pyrene	81 U
53-70-3	Dibenz(a,h)anthracene	81 U
191-24-2	Benzo(g,h,i)perylene	81 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.0%	d5-Phenol	71.1%
2-Fluorobiphenyl	69.8%	2-Fluorophenol	69.8%
d14-p-Terphenyl	83.6%	2,4,6-Tribromophenol	92.8%
d4-1,2-Dichlorobenzene	67.1%	d4-2-Chlorophenol	61.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2

Sample No: PL25A-1396

Lab Sample ID: V897E
LIMS ID: 98-6423
Matrix: Soil
Data Release Authorized: CTW
Reported: 04/13/98

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.9%
pH: 7.0

CAS Number	Analyte	ug/kg
108-95-2	Phenol	150 U
111-44-4	Bis-(2-Chloroethyl) Ether	150 U
95-57-8	2-Chlorophenol	77 U
541-73-1	1,3-Dichlorobenzene	77 U
106-46-7	1,4-Dichlorobenzene	77 U
100-51-6	Benzyl Alcohol	380 U
95-50-1	1,2-Dichlorobenzene	77 U
95-48-7	2-Methylphenol	150 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	77 U
106-44-5	4-Methylphenol	77 U
621-64-7	N-Nitroso-Di-N-Propylamine	150 U
67-72-1	Hexachloroethane	150 U
98-95-3	Nitrobenzene	77 U
78-59-1	Isophorone	77 U
88-75-5	2-Nitrophenol	380 U
105-67-9	2,4-Dimethylphenol	230 U
65-85-0	Benzoic Acid	770 U
111-91-1	bis(2-Chloroethoxy) Methane	77 U
120-83-2	2,4-Dichlorophenol	230 U
120-82-1	1,2,4-Trichlorobenzene	77 U
91-20-3	Naphthalene	77 U
106-47-8	4-Chloroaniline	230 U
87-68-3	Hexachlorobutadiene	150 U
59-50-7	4-Chloro-3-methylphenol	150 U
91-57-6	2-Methylnaphthalene	77 U
77-47-4	Hexachlorocyclopentadiene	380 U
88-06-2	2,4,6-Trichlorophenol	380 U
95-95-4	2,4,5-Trichlorophenol	380 U
91-58-7	2-Chloronaphthalene	77 U
88-74-4	2-Nitroaniline	380 U
131-11-3	Dimethylphthalate	77 U
208-96-8	Acenaphthylene	77 U
99-09-2	3-Nitroaniline	460 U
83-32-9	Acenaphthene	77 U
51-28-5	2,4-Dinitrophenol	770 U
100-02-7	4-Nitrophenol	380 U
132-64-9	Dibenzofuran	77 U
606-20-2	2,6-Dinitrotoluene	380 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 2 of 2
Lab Sample ID: V897E
LIMS ID: 98-6423
Matrix: Soil
Data Release Authorized: *GHJ*
Reported: 04/13/98

Sample No: PL25A-1396

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.9%
pH: 7.0

CAS Number	Analyte	ug/kg
121-14-2	2,4-Dinitrotoluene	380 U
84-66-2	Diethylphthalate	77 U
7005-72-3	4-Chlorophenyl-phenylether	77 U
86-73-7	Fluorene	77 U
100-01-6	4-Nitroaniline	380 U
534-52-1	4,6-Dinitro-2-Methylphenol	770 U
86-30-6	N-Nitrosodiphenylamine	77 U
101-55-3	4-Bromophenyl-phenylether	77 U
118-74-1	Hexachlorobenzene	77 U
87-86-5	Pentachlorophenol	380 U
85-01-8	Phenanthrene	77 U
86-74-8	Carbazole	77 U
120-12-7	Anthracene	77 U
84-74-2	Di-n-Butylphthalate	77 U
206-44-0	Fluoranthene	77 U
129-00-0	Pyrene	77 U
85-68-7	Butylbenzylphthalate	77 U
91-94-1	3,3'-Dichlorobenzidine	380 U
56-55-3	Benzo(a)anthracene	77 U
117-81-7	bis(2-Ethylhexyl)phthalate	77 U
218-01-9	Chrysene	77 U
117-84-0	Di-n-Octyl phthalate	77 U
205-99-2	Benzo(b)fluoranthene	77 U
207-08-9	Benzo(k)fluoranthene	77 U
50-32-8	Benzo(a)pyrene	77 U
193-39-5	Indeno(1,2,3-cd)pyrene	77 U
53-70-3	Dibenz(a,h)anthracene	77 U
191-24-2	Benzo(g,h,i)perylene	77 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	74.8%	d5-Phenol	69.3%
2-Fluorobiphenyl	73.3%	2-Fluorophenol	64.3%
d14-p-Terphenyl	85.1%	2,4,6-Tribromophenol	93.3%
d4-1,2-Dichlorobenzene	71.6%	d4-2-Chlorophenol	64.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2
Lab Sample ID: V897F
LIMS ID: 98-6424
Matrix: Soil
Data Release Authorized:
Reported: 04/13/98

Sample No: PL25A-1397

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.4%
pH: 7.3

CAS Number	Analyte	ug/kg
108-95-2	Phenol	150 U
111-44-4	Bis-(2-Chloroethyl) Ether	150 U
95-57-8	2-Chlorophenol	77 U
541-73-1	1,3-Dichlorobenzene	77 U
106-46-7	1,4-Dichlorobenzene	77 U
100-51-6	Benzyl Alcohol	380 U
95-50-1	1,2-Dichlorobenzene	77 U
95-48-7	2-Methylphenol	150 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	77 U
106-44-5	4-Methylphenol	77 U
621-64-7	N-Nitroso-Di-N-Propylamine	150 U
67-72-1	Hexachloroethane	150 U
98-95-3	Nitrobenzene	77 U
78-59-1	Isophorone	77 U
88-75-5	2-Nitrophenol	380 U
105-67-9	2,4-Dimethylphenol	230 U
65-85-0	Benzoic Acid	770 U
111-91-1	bis(2-Chloroethoxy) Methane	77 U
120-83-2	2,4-Dichlorophenol	230 U
120-82-1	1,2,4-Trichlorobenzene	77 U
91-20-3	Naphthalene	77 U
106-47-8	4-Chloroaniline	230 U
87-68-3	Hexachlorobutadiene	150 U
59-50-7	4-Chloro-3-methylphenol	150 U
91-57-6	2-Methylnaphthalene	77 U
77-47-4	Hexachlorocyclopentadiene	380 U
88-06-2	2,4,6-Trichlorophenol	380 U
95-95-4	2,4,5-Trichlorophenol	380 U
91-58-7	2-Chloronaphthalene	77 U
88-74-4	2-Nitroaniline	380 U
131-11-3	Dimethylphthalate	77 U
208-96-8	Acenaphthylene	77 U
99-09-2	3-Nitroaniline	460 U
83-32-9	Acenaphthene	77 U
51-28-5	2,4-Dinitrophenol	770 U
100-02-7	4-Nitrophenol	380 U
132-64-9	Dibenzofuran	77 U
606-20-2	2,6-Dinitrotoluene	380 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 2 of 2
Lab Sample ID: V897F
LIMS ID: 98-6424
Matrix: Soil
Data Release Authorized:
Reported: 04/13/98

Sample No: PL25A-1397

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: 03/31/98
Date Received: 04/01/98

Date extracted: 04/07/98
Date analyzed: 04/09/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: 13.4%
pH: 7.3

CAS Number	Analyte	ug/kg
121-14-2	2,4-Dinitrotoluene	380 U
84-66-2	Diethylphthalate	77 U
7005-72-3	4-Chlorophenyl-phenylether	77 U
86-73-7	Fluorene	77 U
100-01-6	4-Nitroaniline	380 U
534-52-1	4,6-Dinitro-2-Methylphenol	770 U
86-30-6	N-Nitrosodiphenylamine	77 U
101-55-3	4-Bromophenyl-phenylether	77 U
118-74-1	Hexachlorobenzene	77 U
87-86-5	Pentachlorophenol	380 U
85-01-8	Phenanthrene	77 U
86-74-8	Carbazole	77 U
120-12-7	Anthracene	77 U
84-74-2	Di-n-Butylphthalate	77 U
206-44-0	Fluoranthene	77 U
129-00-0	Pyrene	77 U
85-68-7	Butylbenzylphthalate	77 U
91-94-1	3,3'-Dichlorobenzidine	380 U
56-55-3	Benzo(a)anthracene	77 U
117-81-7	bis(2-Ethylhexyl)phthalate	77 U
218-01-9	Chrysene	77 U
117-84-0	Di-n-Octyl phthalate	77 U
205-99-2	Benzo(b)fluoranthene	77 U
207-08-9	Benzo(k)fluoranthene	77 U
50-32-8	Benzo(a)pyrene	77 U
193-39-5	Indeno(1,2,3-cd)pyrene	77 U
53-70-3	Dibenz(a,h)anthracene	77 U
191-24-2	Benzo(g,h,i)perylene	77 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	76.8%	d5-Phenol	79.6%
2-Fluorobiphenyl	76.6%	2-Fluorophenol	68.0%
d14-p-Terphenyl	80.3%	2,4,6-Tribromophenol	92.9%
d4-1,2-Dichlorobenzene	78.8%	d4-2-Chlorophenol	70.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2
Lab Sample ID: V897MB
LIMS ID: 98-6419
Matrix: Soil
Data Release Authorized: *BWS*
Reported: 04/13/98

Sample No: Method Blank

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: NA
Date Received: NA

Date extracted: 04/07/98
Date analyzed: 04/08/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 30.0 g-dry-wt Equiv
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: NA
pH: NA

CAS Number	Analyte	ug/kg
108-95-2	Phenol	130 U
111-44-4	Bis-(2-Chloroethyl) Ether	130 U
95-57-8	2-Chlorophenol	67 U
541-73-1	1,3-Dichlorobenzene	67 U
106-46-7	1,4-Dichlorobenzene	67 U
100-51-6	Benzyl Alcohol	330 U
95-50-1	1,2-Dichlorobenzene	67 U
95-48-7	2-Methylphenol	130 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	67 U
106-44-5	4-Methylphenol	67 U
621-64-7	N-Nitroso-Di-N-Propylamine	130 U
67-72-1	Hexachloroethane	130 U
98-95-3	Nitrobenzene	67 U
78-59-1	Isophorone	67 U
88-75-5	2-Nitrophenol	330 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	670 U
111-91-1	bis(2-Chloroethoxy) Methane	67 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	67 U
91-20-3	Naphthalene	67 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	130 U
59-50-7	4-Chloro-3-methylphenol	130 U
91-57-6	2-Methylnaphthalene	67 U
77-47-4	Hexachlorocyclopentadiene	330 U
88-06-2	2,4,6-Trichlorophenol	330 U
95-95-4	2,4,5-Trichlorophenol	330 U
91-58-7	2-Chloronaphthalene	67 U
88-74-4	2-Nitroaniline	330 U
131-11-3	Dimethylphthalate	67 U
208-96-8	Acenaphthylene	67 U
99-09-2	3-Nitroaniline	400 U
83-32-9	Acenaphthene	67 U
51-28-5	2,4-Dinitrophenol	670 U
100-02-7	4-Nitrophenol	330 U
132-64-9	Dibenzofuran	67 U
606-20-2	2,6-Dinitrotoluene	330 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 2 of 2
Lab Sample ID: V897MB
LIMS ID: 98-6419
Matrix: Soil
Data Release Authorized:
Reported: 04/13/98

Sample No: Method Blank

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM
Date Sampled: NA
Date Received: NA

Date extracted: 04/07/98
Date analyzed: 04/08/98
Instrument: finn8
GPC Cleanup: NO

Sample Amount: 30.0 g-dry-wt Equiv
Final Extract Volume: 2.0 mL
Dilution Factor: 1:1
Percent Moisture: NA
pH: NA

CAS Number	Analyte	ug/kg
121-14-2	2,4-Dinitrotoluene	330 U
84-66-2	Diethylphthalate	67 U
7005-72-3	4-Chlorophenyl-phenylether	67 U
86-73-7	Fluorene	67 U
100-01-6	4-Nitroaniline	330 U
534-52-1	4,6-Dinitro-2-Methylphenol	670 U
86-30-6	N-Nitrosodiphenylamine	67 U
101-55-3	4-Bromophenyl-phenylether	67 U
118-74-1	Hexachlorobenzene	67 U
87-86-5	Pentachlorophenol	330 U
85-01-8	Phenanthrene	67 U
86-74-8	Carbazole	67 U
120-12-7	Anthracene	67 U
84-74-2	Di-n-Butylphthalate	67 U
206-44-0	Fluoranthene	67 U
129-00-0	Pyrene	67 U
85-68-7	Butylbenzylphthalate	67 U
91-94-1	3,3'-Dichlorobenzidine	330 U
56-55-3	Benzo(a)anthracene	67 U
117-81-7	bis(2-Ethylhexyl)phthalate	67 U
218-01-9	Chrysene	67 U
117-84-0	Di-n-Octyl phthalate	67 U
205-99-2	Benzo(b)fluoranthene	67 U
207-08-9	Benzo(k)fluoranthene	67 U
50-32-8	Benzo(a)pyrene	67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67 U
53-70-3	Dibenz(a,h)anthracene	67 U
191-24-2	Benzo(g,h,i)perylene	67 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	64.4%	d5-Phenol	71.6%
2-Fluorobiphenyl	74.0%	2-Fluorophenol	67.4%
d14-p-Terphenyl	65.1%	2,4,6-Tribromophenol	66.3%
d4-1,2-Dichlorobenzene	79.4%	d4-2-Chlorophenol	74.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 1

Lab Sample ID: V897SB
LIMS ID: 98-6419
Matrix: Soil

QC Report No: V897-Boeing Plant II
Project: Plant II
P12 0A3IM

Data Release Authorized:
Reported: 04/13/98

LABORATORY CONTROL SAMPLE
Date extracted: 04/07/98
Date analyzed: 04/08/98

CONSTITUENT	SPIKE VALUE	SPIKE ADDED	% RECOVERY
Phenol	1810	2500	72.4%
2-Chlorophenol	1680	2500	67.2%
1,4-Dichlorobenzene	1200	1670	71.9%
N-Nitroso-Di-N-Propylamine	1090	1670	65.3%
1,2,4-Trichlorobenzene	1210	1670	72.5%
4-Chloro-3-methylphenol	1720	2500	68.8%
Acenaphthene	1460	1670	87.4%
4-Nitrophenol	1640	2500	65.6%
2,4-Dinitrotoluene	1220	1670	73.1%
Pentachlorophenol	1310	2500	52.4%
Pyrene	1200	1670	71.9%

Lab Control Surrogate Recovery

d5-Nitrobenzene	73.6%	d5-Phenol	75.2%
2-Fluorobiphenyl	74.2%	2-Fluorophenol	66.7%
d14-p-Terphenyl	68.2%	2,4,6-Tribromophenol	69.5%
d4-1,2-Dichlorobenzene	75.6%	d4-2-Chlorophenol	72.8%

Values reported in ug/kg-dry-weight

APPENDIX D

QUALITY CONTROL CHECKLIST

Table 3—OA 3 QA Checklist

Description	Criteria	Inspection Method	Inspected by	Approved (initial)
1. Mark Soil Excavation Area	+- 1 foot	tape measure	Construction Engineer	JDV
2. Soil Manifesting	NA	visual	Construction Engineer	JDV for M.G.
3. Spill Prevention	place plastic under roll-offs	visual	Construction Engineer	
	no free liquid in soil	visual	Construction Engineer	JDV
	verify no leaks in temporary tanks after liquid placement	visual	Construction Engineer	N/A (Not Applicable)
4. Sampling	1 confirmatory bottom samples and 2 sidewall samples spaced over bottom and sides of excavation	visual	Construction Engineer	JDV
	3 samples from each soil pile	visual	Construction Engineer	JDV
5. Decontamination	decon hoe bucket	observation	Construction Engineer	JDV
6. Backfill	as specified by Boeing	visual- verify before shipment to site	Construction Engineer	JDV for M.G.
7. Excavation area and depth	as delineated based on pre-removal soil sample data and to groundwater or as identified otherwise in the field	measure (using tape measure or equivalent). Measure area and depth in 4 corners	Construction Engineer	JDV